MITSUBISHI ELECTRIC

SPLIT-TYPE AIR CONDITIONERS

Changes for the Better

Revision D:
- Parts numbers of indoor fan motor and motor band have been changed.
- Some descriptions have been modified.

Please void OB367 REVISED EDITION-C.

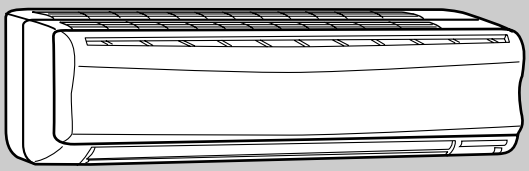
INDOOR UNIT
SERVICE MANUAL

No. OB367
REVISED EDITION-D

Models

MSH-GA50VB - E1
MSH-GA60VB - E1
MSH-GA80VB - E1

Outdoor unit service manual
MUH-GA•VB Series (OB368)



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NOTE:
This service manual describes technical data of the indoor units.
RoHS compliant products have <G> mark on the spec name plate.
For servicing of RoHS compliant products, refer to the RoHS PARTS LIST (RoHS compliant).

CE

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Use the specified refrigerant only

Never use any refrigerant other than that specified.

Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.

Correct refrigerant is specified in the manuals and on the spec labels provided with our products.

We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

Revision A:
•RoHS PARTS LIST has been added.

Revision B:
•RoHS PARTS LIST has been corrected.

Revision C:
• Another type of the electronic control P.C. board (TYPE 2) has been added to the original one (TYPE 1). They are both compatible with MSH-GA50/60/80VB-E1.

Revision D:
• Parts numbers of indoor fan motor and motor band have been changed.
• Some descriptions have been modified.

1 TECHNICAL CHANGES

MSH-A18WV -E1 → MSH-GA50VB -E1

MSH-A24WV -E1 → MSH-GA60VB -E1

MSH-A30WV -E1 → MSH-GA80VB -E1

1. Model name has been changed.
   Indication of capacity has been changed. (BTU→kW)
2. Grille design has been changed.
3. Unit size has been changed.(W 1,100mm×H 325mm×D 227mm → W1,100mm×H 325mm×D 258mm)

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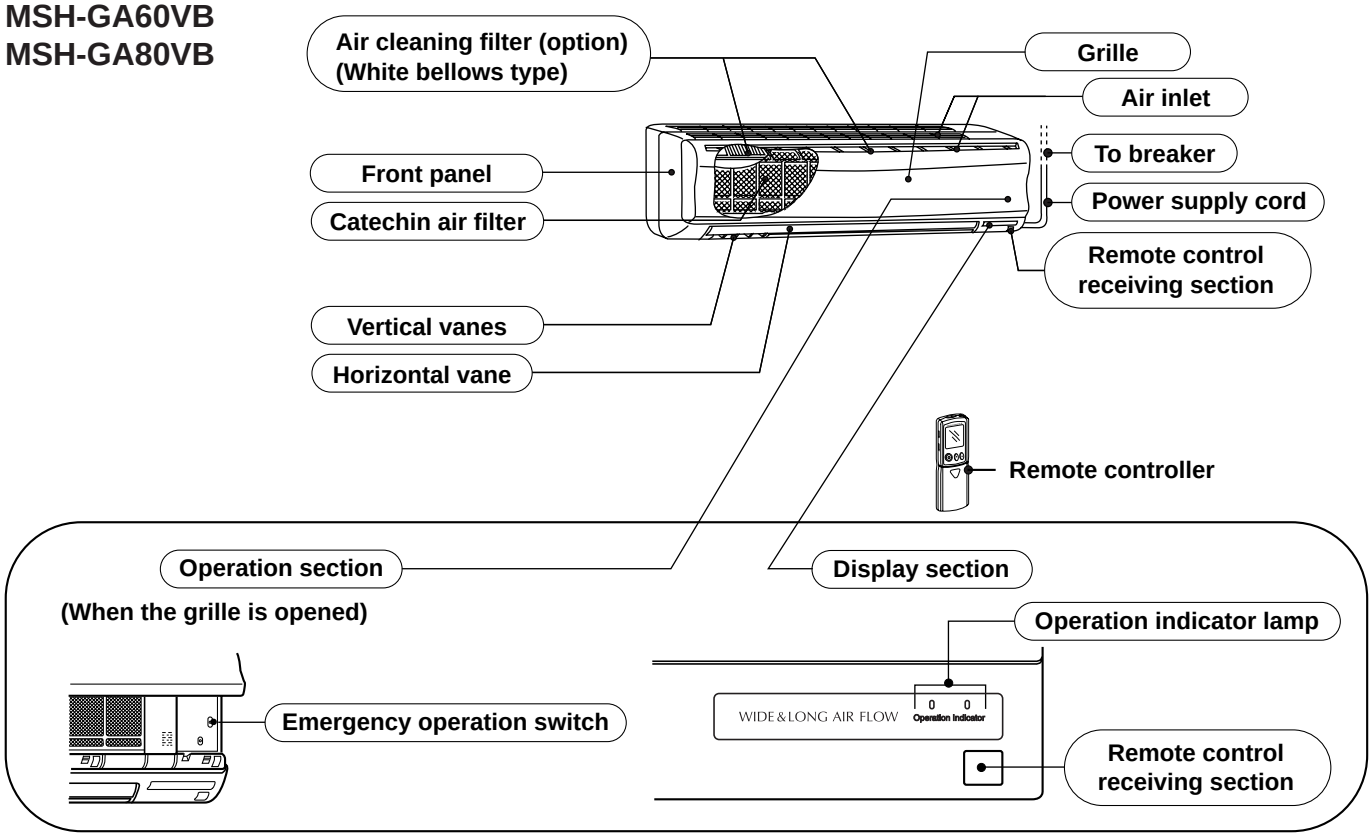
2 PART NAMES AND FUNCTIONS

MSH-GA50VB
MSH-GA60VB
MSH-GA80VB



ACCESSORIES

		MSH-GA50VB MSH-GA60VB MSH-GA80VB
①	Installation plate	1
②	Installation plate fixing screw 4 × 25 mm	7
③	Remote controller holder	1
④	Fixing screw for ③ × 3.5 × 1.6 mm (Black)	2
⑤	Battery (AAA) for remote controller	2
⑥	Wireless remote controller	1
⑦	Felt tape (Used for left or left-rear piping)	1

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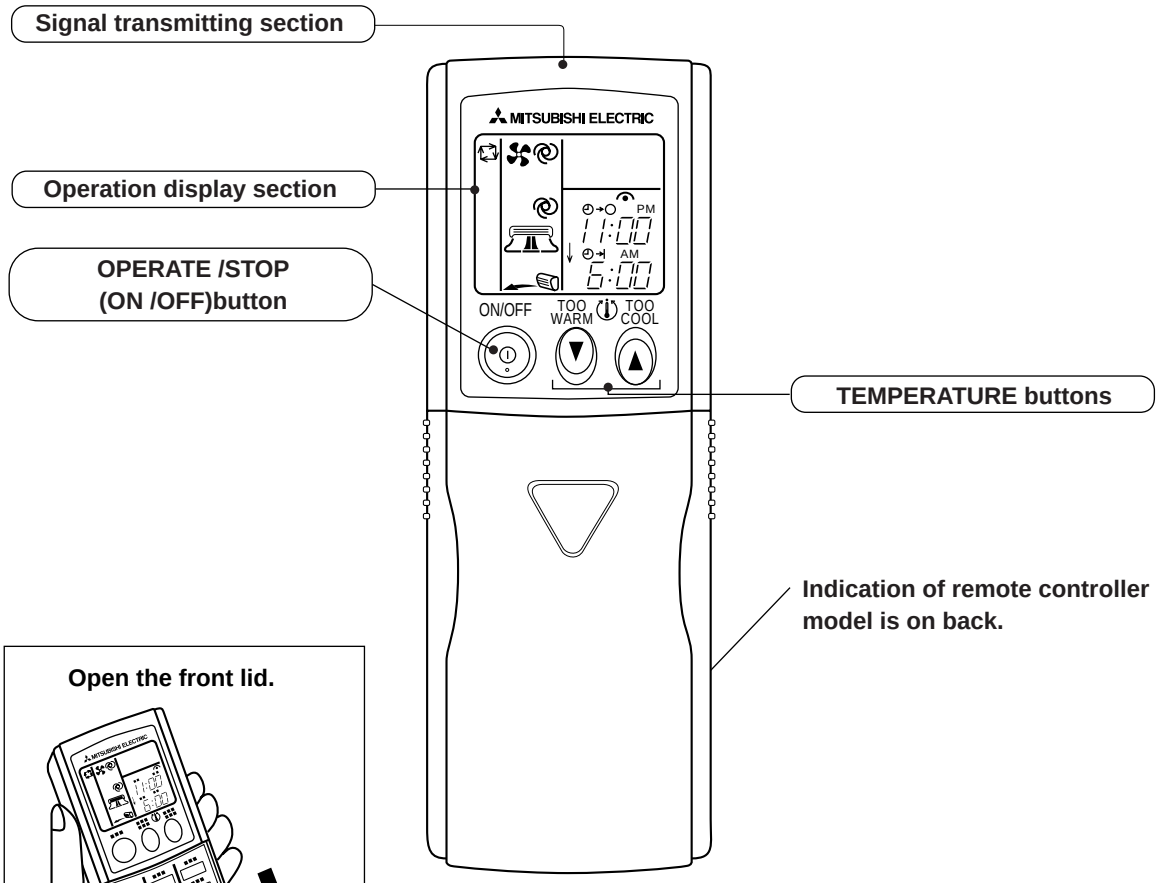
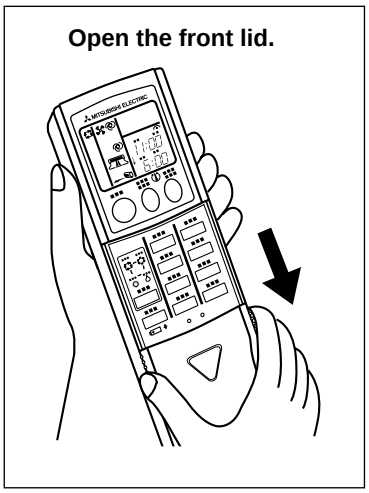
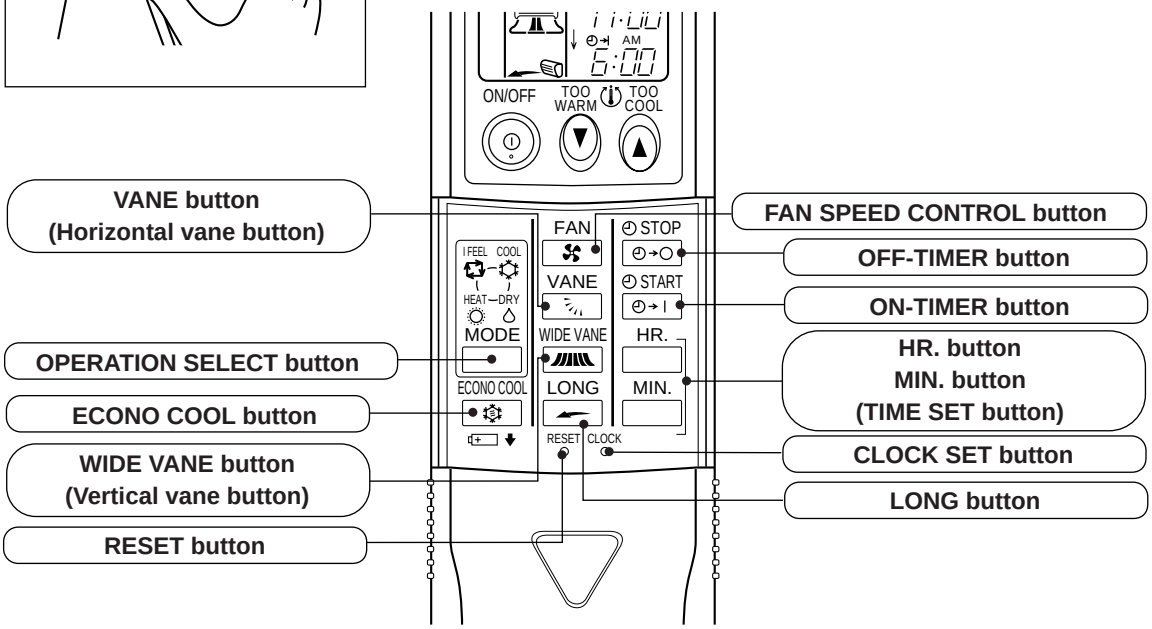
REMOTE CONTROLLER

MSH-GA50VB
MSH-GA60VB
MSH-GA80VB







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3 SPECIFICATION

Indoor model			MSH-GA50VB		MSH-GA60VB	
Function			Cooling	Heating	Cooling	Heating
Power supply			Single phase 230V, 50Hz		Single phase 230V, 50Hz	
Capacity	Air flow (High/Med./Low)	m³ /h	768/642/528		768/672/588	768/642/528
Electrical data	Breaker capacity	A	10		10	
	Running current	A	0.3		0.3	
	Power input	W	60		60	
	Power factor	%	87		87	
	Fan motor current	A	0.30		0.30	
Fan motor	Model		RC4V32-AA		RC4V32-AA	
	Winding resistance (at 20℃)	Ω	WHT-BLK 293 BLK-RED 146		WHT-BLK 293 BLK-RED 146	
Dimensions W×H×D		mm	1,100×325×258		1,100×325×258	
Weight		kg	16		16	
Special remarks	Air direction		5		5	
	Sound level (High/Med./Low)	dB	42/38/34		45/41/37	45/40/34
	Fan speed (High/Med./Low)	rpm	1,070/920/780		1,070/960/850	1,070/920/780
	Fan speed regulator		3		3	
	Thermistor RT11 (at 25℃)	kΩ	10		10	
	Thermistor RT12 (at 25℃)	kΩ	10		10	
Remote controller model			KP0A, KM04A		KP0A, KM04A	

Indoor model			MSH-GA80VB	
Function			Cooling	Heating
Power supply			Single phase 230V, 50Hz	
Capacity	Air flow (High/Med./Low)	m³ /h	960/822/684	960/834/732
Electrical data	Breaker capacity	A	10	
	Running current	A	0.34	
	Power input	W	69	
	Power factor	%	88	
	Fan motor current	A	0.34	
Fan motor	Model		RC4V40-AA	
	Winding resistance (at 20℃)	Ω	WHT-BLK 138.2 BLK-RED 159.0	
Dimensions W×H×D		mm	1,100×325×258	
Weight		kg	16	
Special remarks	Air direction		5	
	Sound level (High/Med./Low)	dB	47/42/37	
	Fan speed (High/Med./Low)	rpm	1,310/1,130/970	1,310/1,150/1,020
	Fan speed regulator		3	
	Thermistor RT11 (at 25℃)	kΩ	10	
	Thermistor RT12 (at 25℃)	kΩ	10	
	Thermistor RT13 (at 25℃)	kΩ	10	
Remote controller model			KP0A, KM04A	

NOTE: Test conditions are based on ISO 5151.
Cooling : Indoor Dry-bulb temperature 27℃ Wet-bulb temperature 19℃
Outdoor Dry-bulb temperature 35℃ Wet-bulb temperature (24℃)
Heating : Indoor Dry-bulb temperature 20℃ Wet-bulb temperature 15.5℃
Outdoor Dry-bulb temperature 7℃ Wet-bulb temperature 6℃
Indoor-Outdoor piping length : 5m

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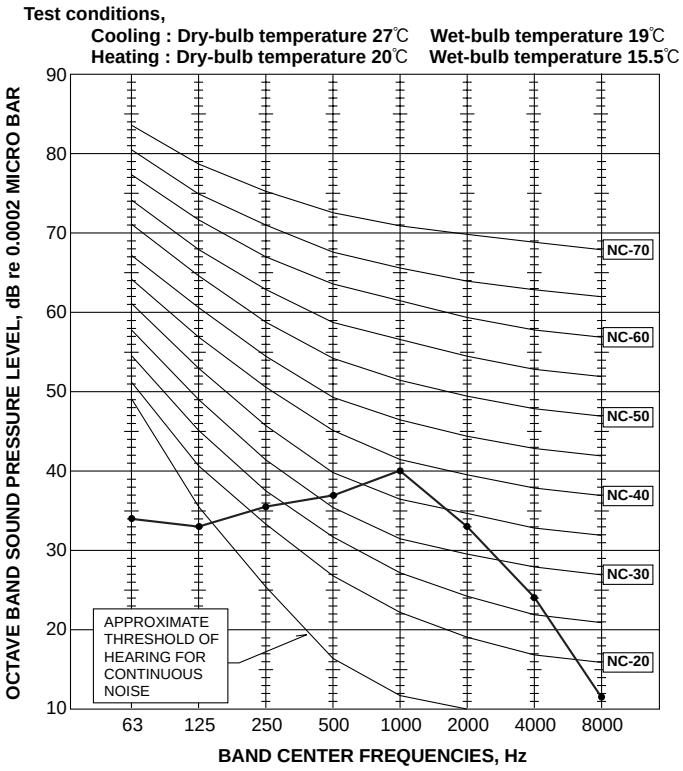
4 NOISE CRITERIA CURVES

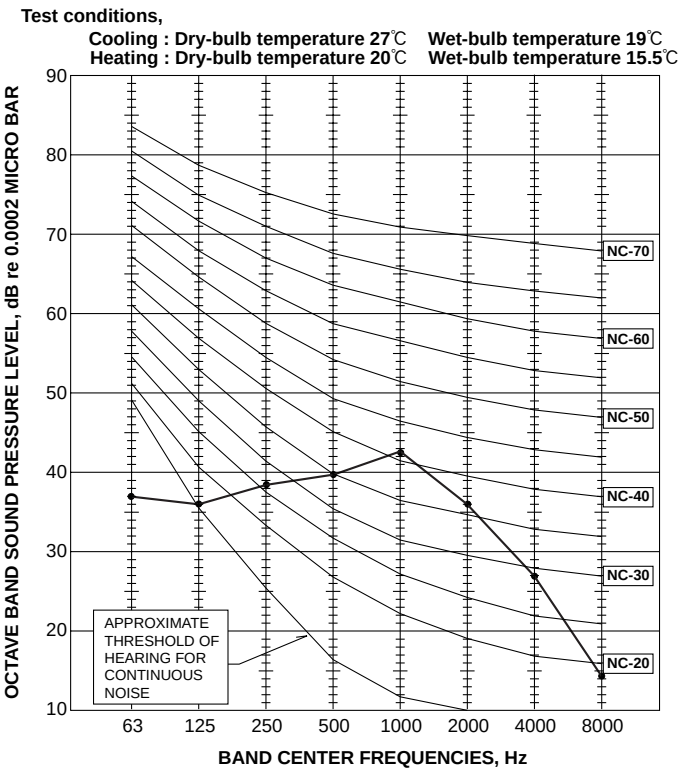
MSH-GA50VB

FAN SPEED	SPL(dB(A))	LINE
High	42	



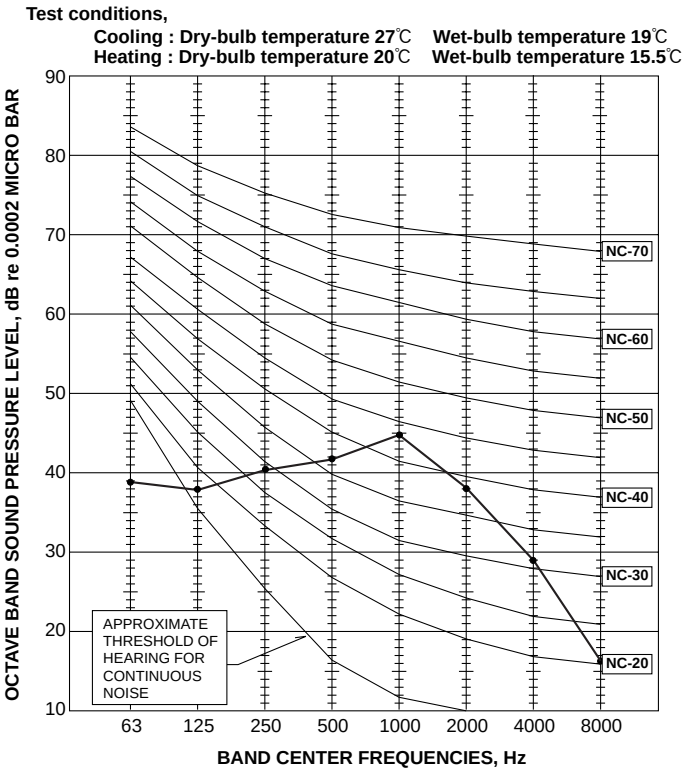
MSH-GA60VB

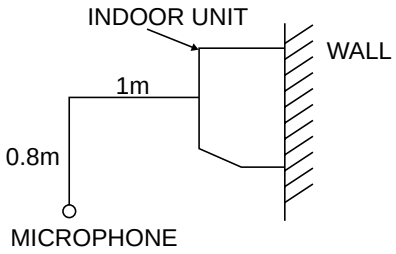
FAN SPEED	SPL(dB(A))	LINE
High	45	



MSH-GA80VB

FAN SPEED	SPL(dB(A))	LINE
High	47	





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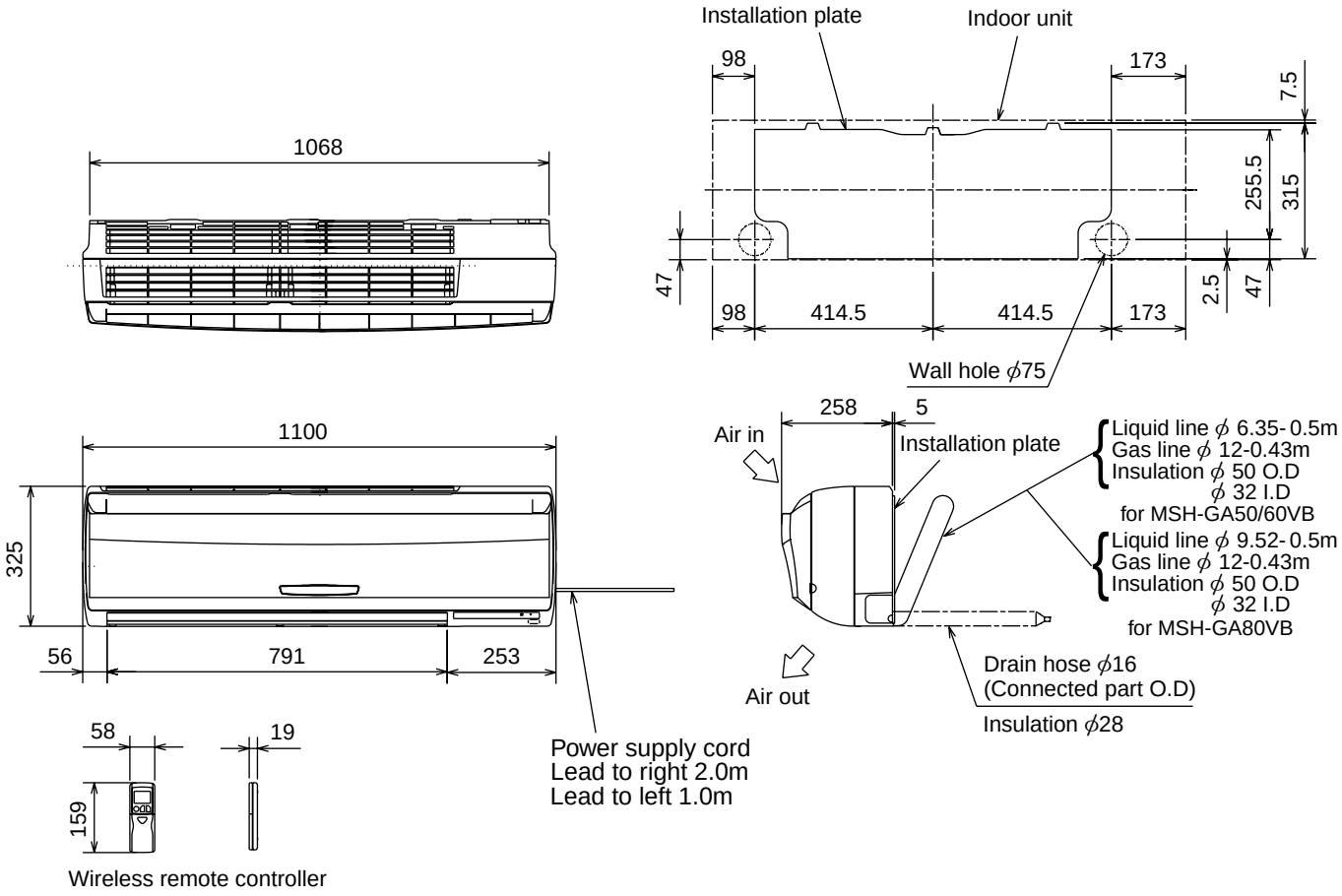
5 OUTLINES AND DIMENSIONS

MSH-GA50VB
MSH-GA60VB
MSH-GA80VB

Unit: mm



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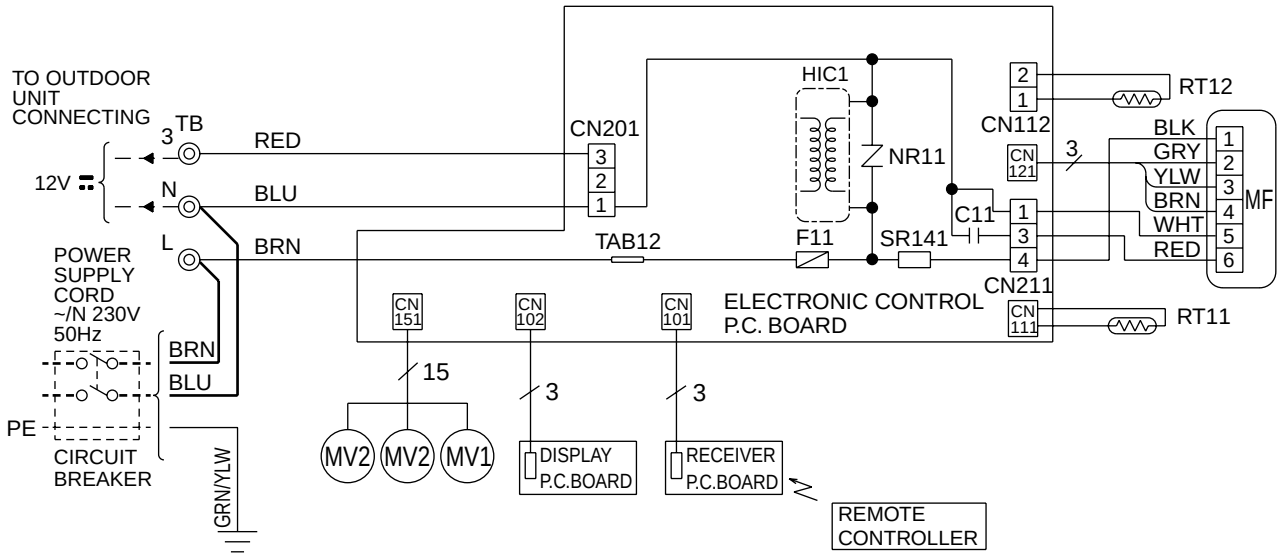
6 WIRING DIAGRAM

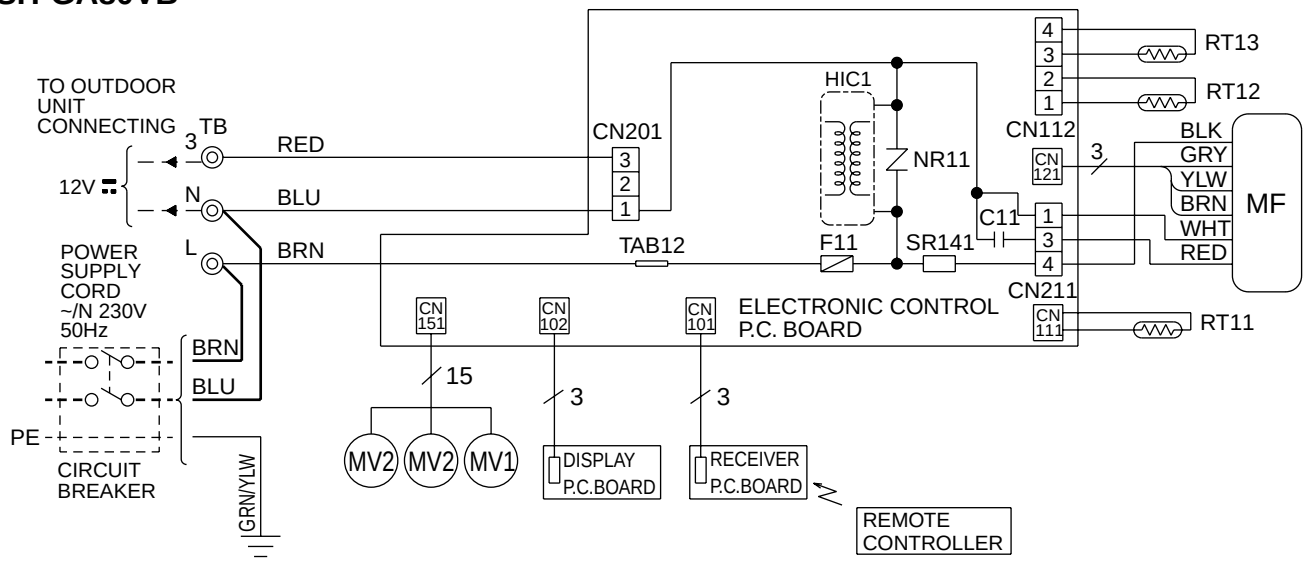
MSH-GA50VB
MSH-GA60VB



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C11	INDOOR FAN CAPACITOR	MV1	VANE MOTOR (HORIZONTAL)	RT12	INDOOR COIL THERMISTOR
F11	FUSE (3.15A)	MV2	VANE MOTOR (VERTICAL)	SR141	SOLID STATE RELAY
HIC1	DC/DC CONVERTER	NR11	VARISTOR	TB	TERMINAL BLOCK
MF	INDOOR FAN MOTOR (INNER FUSE)	RT11	ROOM TEMPERATURE THERMISTOR		

NOTES: 1.About the outdoor side electric wiring refer to the outdoor unit electric wiring diagram for servicing.
2.Use copper conductors only. (For field wiring)
3.Symbols below indicate.
◎ : Terminal block ⊏⊐⊐⊐ : Connector

MSH-GA80VB



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C11	INDOOR FAN CAPACITOR	MV2	VANE MOTOR(VERTICAL)	SR141	SOLID STATE RELAY
F11	FUSE(3.15A)	NR11	VARISTOR	TB	TERMINAL BLOCK
HIC1	DC/DC CONVERTER	RT11	ROOM TEMPERATURE THERMISTOR		
MF	INDOOR FAN MOTOR(INNER PROTECTOR)	RT12	INDOOR COIL THERMISTOR (MAIN)		
MV1	VANE MOTOR(HORIZONTAL)	RT13	INDOOR COIL THERMISTOR (SUB)		

NOTES: 1.About the outdoor side electric wiring refer to the outdoor unit electric wiring diagram for servicing.
2.Use copper conductors only. (For field wiring)
3.Symbols below indicate.
◎ : Terminal block ⊏⊐⊐⊐ : Connector

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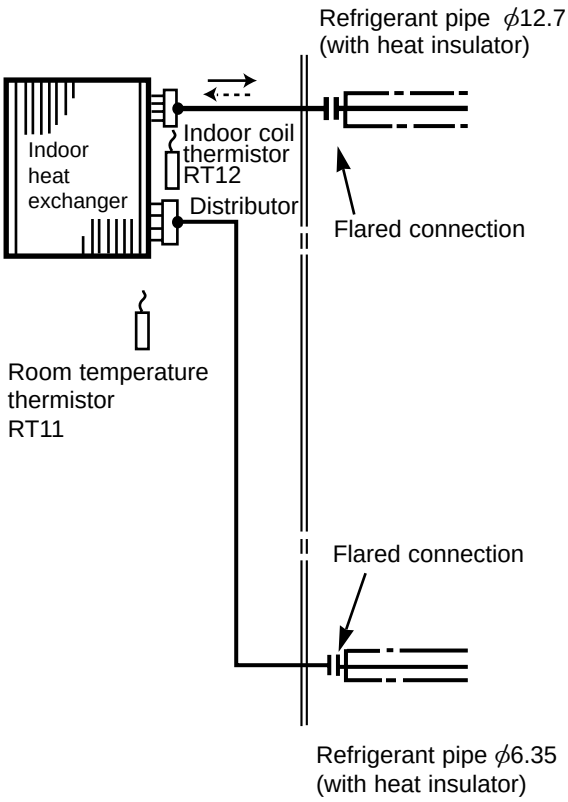
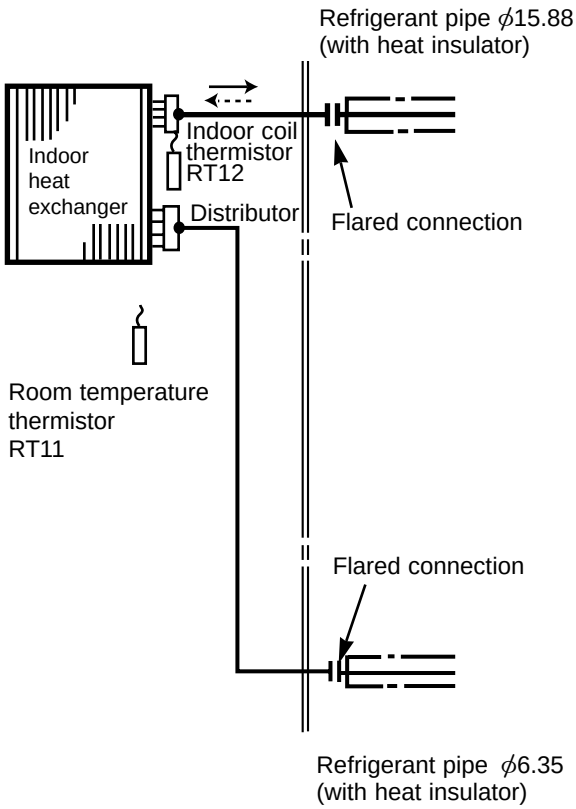
7 REFRIGERANT SYSTEM DIAGRAM

MSH-GA50VB

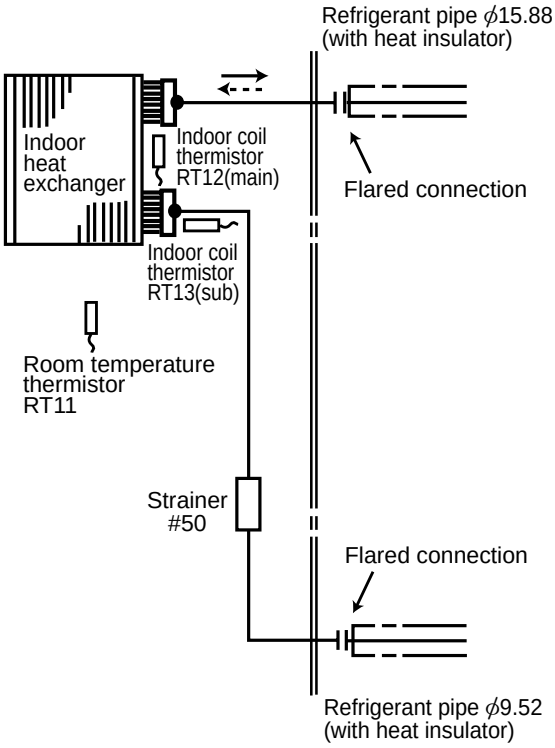


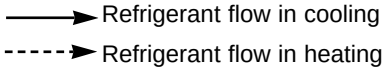
MSH-GA60VB

Unit:mm



MSH-GA80VB





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8 SERVICE FUNCTIONS

MSH-GA50VB
MSH-GA60VB
MSH-GA80VB

8-1. TIMER SHORT MODE

For service, set time can be shortened by short circuit of JPG and JPS on the electronic control P.C. board.
The time will be shortened as follows. (Refer to 9-6.)
Set time : 1 minute ➔ 1-second
Set time : 3 minute ➔ 3-second (It takes 3 minutes for the compressor to start operation. However, the starting time is shortened by short circuit of JPG and JPS.)

8-2. P.C. BOARD MODIFICATION FOR INDIVIDUAL OPERATION

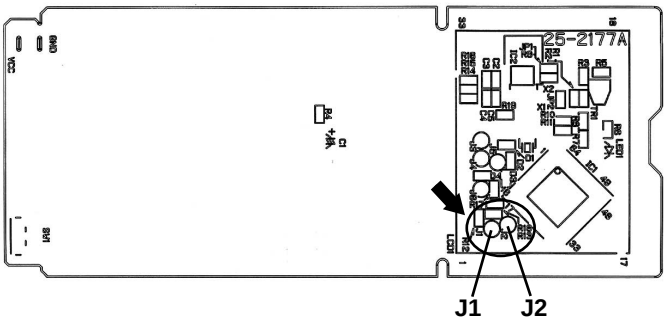
A maximum of 4 indoor units with wireless remote controllers can be used in a room.
In this case, to operate each indoor unit individually by each remote controller, P.C. boards of remote controller must be modified according to the number of the indoor unit.

How to modify the remote controller P.C. board

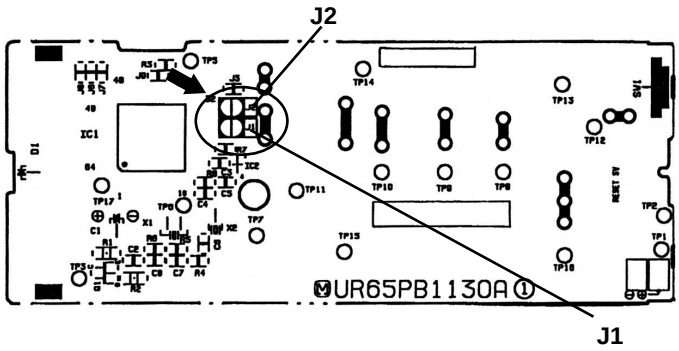
Remove batteries before modification.
The board has a print as shown below :

NOTE : For modification, take out the batteries and press the OPERATE/ STOP (ON/ OFF) button 2 or 3 times at first. After modification, put back the batteries then press the RESET button.

Remote controller model : KM04A



Remote controller model : KP0A



The P.C. board has the print “J1” and “J2”. Solder “J1” and “J2” according to the number of indoor unit as shown in Table 1.
After modification, press the RESET button.

Table 1

	1 unit operation	2 units operation	3 units operation	4 units operation
No. 1 unit	No modification	Same as at left	Same as at left	Same as at left
No. 2 unit	–	Solder J1	Same as at left	Same as at left
No. 3 unit	–	–	Solder J2	Same as at left
No. 4 unit	–	–	–	Solder both J1 and J2

How to set the remote controller exclusively for particular indoor unit

After you turn the breaker ON, the first remote controller that sends the signal to the indoor unit will be regarded as the remote controller for the indoor unit.
The indoor unit will only accept the signal from the remote controller that has been assigned to the indoor unit once they are set. The setting will be cancelled if the breaker has turned off, or the power supply has shut down.
Please conduct the above setting once again after the power has restored.

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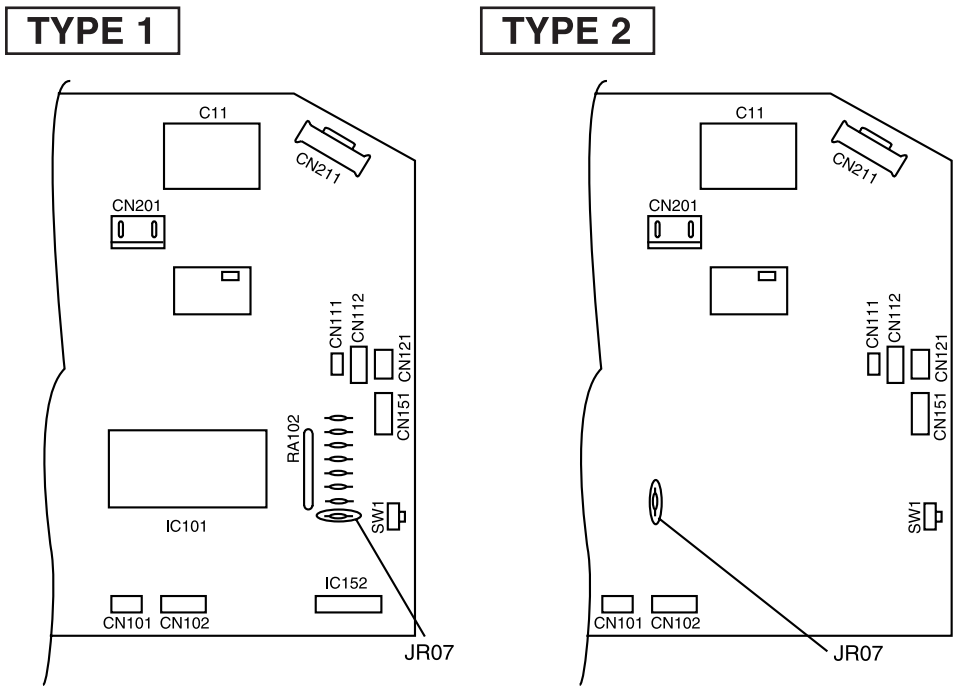
8-3. AUTO RESTART FUNCTION

When the indoor unit is controlled with the remote controller, the operation mode, set temperature, and the fan speed are memorized by the indoor electronic control P.C. board. “AUTO RESTART FUNCTION” automatically starts operation in the same mode just before the shutoff of the main power. However if the unit is operated in “I FEEL CONTROL” mode before power failure, the operation is not memorized. In “I FEEL CONTROL” mode, the operation is decided by the initial room temperature.

How to disable “AUTO RESTART FUNCTION”

①Turn OFF the main power for the unit.
②Pull out the electronic control P.C. board, the receiver P.C. board and the display P.C. board. (Refer to 10-1.2.)
③Solder jumper wire to JR07 on the indoor electronic control P.C. board. (Refer to 9-6.)



Operation

①If the main power has been cut, the operation settings remain.
②After the power is restored, the unit restarts automatically according to the memory.(However, it takes at least 3 minutes for the compressor to start running.)

NOTE

- The operation settings are memorized when 10 seconds have passed after the remote controller was operated with the remote controller.
- If main power is turned OFF or a power failure occurs while AUTO START/STOP timer is active, the timer setting is cancelled.
- If the unit has been OFF with the remote controller before power failure, the auto restart function does not work as the power button of the remote controller is OFF.
- To prevent breaker OFF due to the rush of starting current, systematize other home appliances not to turn ON at the same time.
- When some air conditioners are connected to the same supply system, if they are operated before power failure, the starting current of all the compressors may flow simultaneously at restart.
  Therefore, the special counter-measures are required to prevent the main voltage-drop or the rush of the starting current by adding to the system that allows the units to start one by one.

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9 TROUBLESHOOTING

MSH-GA50VB
MSH-GA60VB
MSH-GA80VB

9-1. Cautions on troubleshooting

1. Before troubleshooting, check the following:

(1) Check the power supply voltage.
(2) Check the indoor/outdoor connecting wire for mis-wiring.

2. Take care the following during servicing.

(1) Before servicing the air conditioner, be sure to turn OFF the main unit first with the remote controller, and then after confirming the horizontal vane is closed, turn OFF the breaker and / or disconnect the power plug.
(2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the electronic control P.C. board.
(3) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
(4) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.

<Incorrect> <Correct>

Lead wiring Housing point

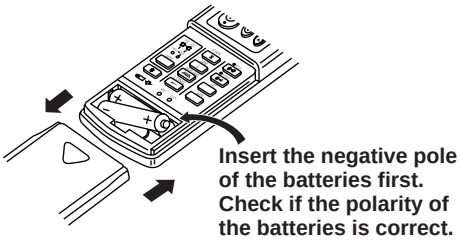
3. Troubleshooting procedure

(1) Check if the OPERATION INDICATOR lamp on the indoor unit is flashing ON and OFF to indicate an abnormality.
To make sure, check how many times the OPERATION INDICATOR lamp is flashing ON and OFF before starting service work.
(2) Before servicing, check that the connector and terminal are connected properly.
(3) When the electronic control P.C. board seems to be defective, check the copper foil pattern for disconnection and the components for bursting and discolouration.
(4) When troubleshooting, refer to 9-2. and 9-3.

4. How to replace batteries

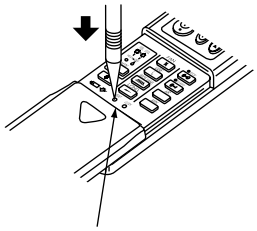
Weak batteries may cause the remote controller malfunction.
In this case, replace the batteries to operate the remote controller normally.

① Remove the front lid and insert batteries.
Then reattach the front lid.



Insert the negative pole of the batteries first. Check if the polarity of the batteries is correct.

② Press the RESET button with a thin instrument, and then use the remote controller.



RESET button

NOTE : 1. If the RESET button is not pressed, the remote controller may not operate correctly.
2. Do not use the leaking batteries.

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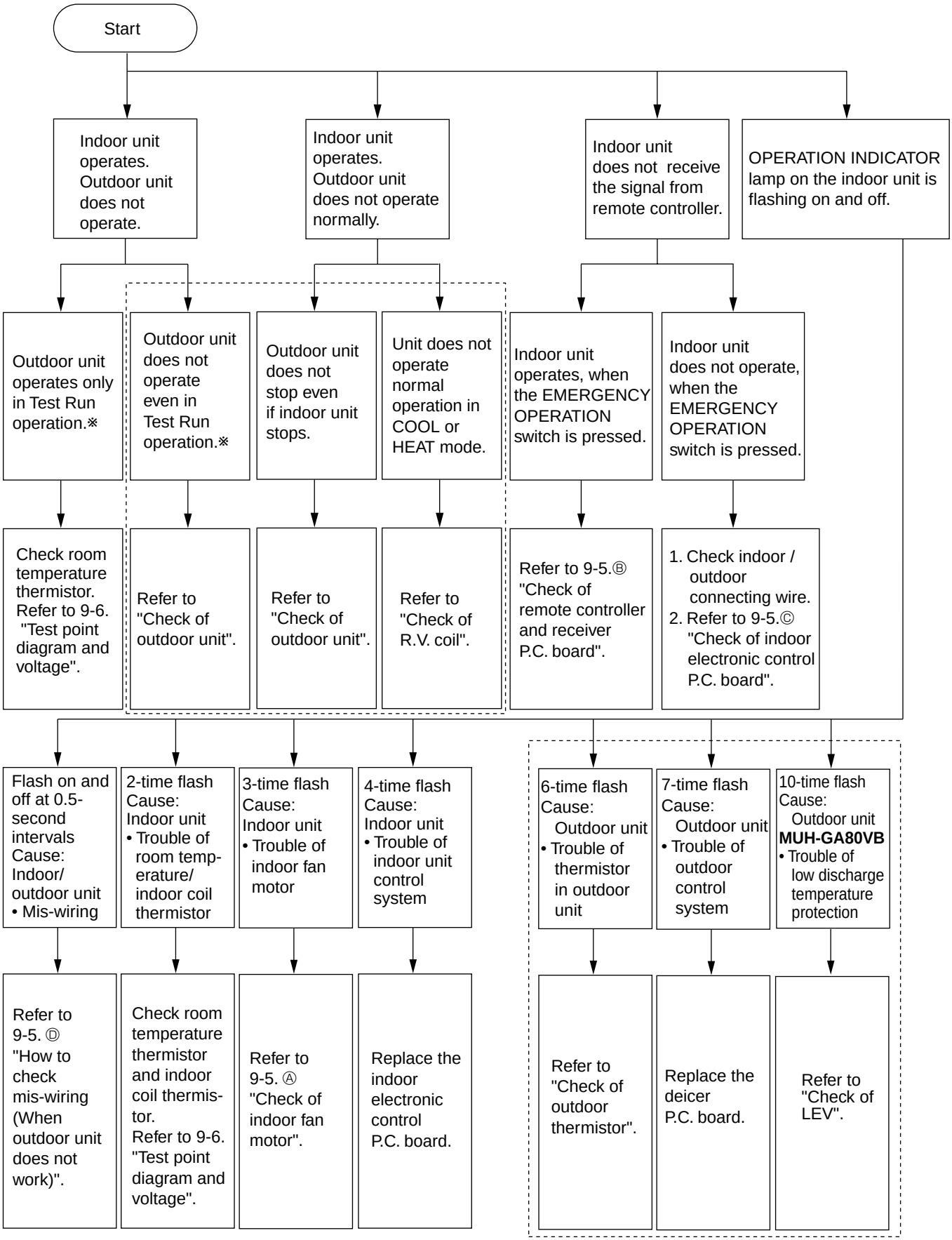
9-2. Instruction of troubleshooting


Start
Indoor unit operates. Outdoor unit does not operate.
Indoor unit operates. Outdoor unit does not operate normally.
Indoor unit does not receive the signal from remote controller.
OPERATION INDICATOR lamp on the indoor unit is flashing on and off.
Outdoor unit operates only in Test Run operation.※
Outdoor unit does not operate even in Test Run operation.※
Outdoor unit does not stop even if indoor unit stops.
Unit does not operate normal operation in COOL or HEAT mode.
Indoor unit operates, when the EMERGENCY OPERATION switch is pressed.
Indoor unit does not operate, when the EMERGENCY OPERATION switch is pressed.
Check room temperature thermistor. Refer to 9-6. "Test point diagram and voltage".
Refer to "Check of outdoor unit".
Refer to "Check of outdoor unit".
Refer to "Check of R.V. coil".
Refer to 9-5.Ⓑ "Check of remote controller and receiver P.C. board".
1. Check indoor / outdoor connecting wire.
2. Refer to 9-5.Ⓒ "Check of indoor electronic control P.C. board".
Flash on and off at 0.5-second intervals Cause: Indoor/ outdoor unit • Mis-wiring
2-time flash Cause: Indoor unit • Trouble of room temp-erature/ indoor coil thermistor
3-time flash Cause: Indoor unit • Trouble of indoor fan motor
4-time flash Cause: Indoor unit • Trouble of indoor unit control system
6-time flash Cause: Outdoor unit • Trouble of thermistor in outdoor unit
7-time flash Cause: Outdoor unit • Trouble of outdoor control system
10-time flash Cause: Outdoor unit MUH-GA80VB • Trouble of low discharge temperature protection
Refer to 9-5. Ⓓ "How to check mis-wiring (When outdoor unit does not work)".
Check room temperature thermistor and indoor coil thermis-tor. Refer to 9-6. "Test point diagram and voltage".
Refer to 9-5. Ⓐ "Check of indoor fan motor".
Replace the indoor electronic control P.C. board.
Refer to "Check of outdoor thermistor".
Replace the deicer P.C. board.
Refer to "Check of LEV".

※"Test Run operation" means the operation within 30 minutes after EMERGENCY OPERATION switch is pressed.
Refer to outdoor unit service manual.

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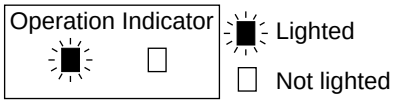
9-3. Troubleshooting check table

• The following indication applies regardless of shape of the indicator.



· Flashing of the OPERATION INDICATOR lamp (on the left-hand side) indicates possible abnormalities.
· The OPERATION INDICATOR lamp (on the left-hand side) is lighting during normal operation.

Before taking measures, make sure that the symptom reappears for accurate troubleshooting.
Self check table

No.	Abnormal point	Operation indicator lamp	Symptom	Condition	Remedy
1	Mis-Wiring	0.5-second ON 0.5-second OFF	Outdoor unit does not operate.	3 minutes after power supply turns ON, when serial signal is not received.	• Refer to 9-5. Ⓓ "How to check mis-wiring ".
2	Indoor coil thermistor Room temperature thermistor	2-time flash 2.5-second OFF	Outdoor unit does not operate.	Detect Indoor coil/room temperature thermistor short or open circuit every 8 seconds during operation.	• Refer to the characteristics of indoor coil thermistor, and room temperature thermistor (9-6.).
3	Indoor fan motor	3-time flash 2.5-second OFF	Indoor fan repeats 12 seconds ON and 3minutes OFF. When the indoor fan breaks, the fan keeps stopping.	Rotational frequency feedback signal is not emitted for 12-second after indoor fan motor is operated.	• Refer to 9-5. Ⓐ "Check of indoor fan motor".
4	Indoor control system	4-time flash 2.5-second OFF	Outdoor unit does not operate.	It cannot properly read data in the nonvolatile memory of the indoor electronic control P.C. board.	• Check the indoor electronic control P.C. board.
5	Outdoor thermistor	6-time flash 2.5-second OFF	Outdoor unit does not operate.	<Thermistor short> Thermistors are abnormal when they short after compressor start-up. <Thermistor open> Thermistors are abnormal when they open after compressor start-up. However, discharge temperature thermistor is abnormal when open circuit is detected more than 10 minutes after compressor start-up.	• Shortage of refrigerant • Check the deicer P.C. board. Refer to "Check of outdoor thermistor". Refer to outdoor service manual.
6	Outdoor control system	7-time flash 2.5-second OFF	Outdoor unit does not operate.	It cannot properly read data in the nonvolatile memory of the deicer P.C. board. Outdoor unit stops [and restarts 3 minutes later (**MUH-GA60VB**).]	• Check the deicer P.C. board. Refer to outdoor service manual.
7	**MUH-GA80VB** Low discharge temperature protection	10-time flash 2.5-second OFF	Outdoor unit does not operate.	**MUH-GA80VB** Discharge temperature has been 50℃ or less on cool operation, or has been 49℃ or less on heat operation for 20 minutes.	**MUH-GA80VB** • Refer to "Check of LEV". • Check refrigerant circuit and refrigerant amount. Refer to outdoor unit service manual.

NOTE : When the indoor unit has started operation and the above detection method has detected an abnormality (the first detection after the power ON), the indoor electronic control P.C. board turns OFF the indoor fan motor with the OPERATION INDICATOR lamp flashing.

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9-4. Trouble criterion of main parts

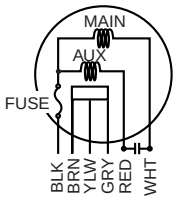
MSH-GA50VB
MSH-GA60VB
MSH-GA80VB

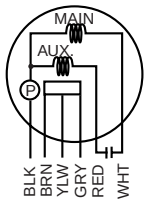
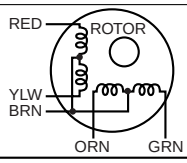
<table>
<tr><th>Part name</th><th colspan="2">Check method and criterion</th><th>Figure</th></tr>
<tr><td>Room temperature thermistor(RT11)
Indoor coil thermistor (RT12(main), RT13(sub))</td><td colspan="2">Measure the resistance with a tester.
(Part temperature 10˚C ~ 30˚C)

Refer to 9-6."Test point diagram and voltage",
"Indoor electronic control P.C. board", for the chart of thermistor.</td><td></td></tr>
<tr><td rowspan="2">Indoor fan motor(MF)

MSH-GA50/GA60VB
INNER FUSE
145℃ CUT OFF

MSH-GA80VB
INNER PROTECTOR
135± 5℃ OPEN</td><td>Motor part</td><td>Measure the resistance between the terminals with a tester.
(Part temperature 10˚C ~ 30˚C)

<table>
<tr><th rowspan="2">Color of lead wire</th><th colspan="2">Normal</th></tr>
<tr><th>MSH-GA50/GA60VB</th><th>MSH-GA80VB</th></tr>
<tr><td>WHT – BLK</td><td>282 Ω ~ 305 Ω</td><td>132 Ω ~ 144 Ω</td></tr>
<tr><td>BLK – RED</td><td>141 Ω ~ 152 Ω</td><td>152 Ω ~ 166 Ω</td></tr>
</table></td><td rowspan="2">MSH-GA50/GA60VB
 

MSH-GA80VB
 
</td></tr>
<tr><td>Sensor part</td><td>Measure the voltage power ON.
<table>
<tr><th>Color of lead wire</th><th>Normal</th></tr>
<tr><td>BRN – YLW</td><td>4.5 ~ 5.5V</td></tr>
<tr><td>YLW – GRY</td><td>(When fan revolved one time)
0V➔5V➔0V
(Approx.)</td></tr>
</table></td></tr>
<tr><td>Horizontal vane motor(MV1)
Vertical vane motor(MV2)</td><td colspan="2">Measure the resistance between the terminal with a tester.
(Part temperature 10°C ~ 30°C)
<table>
<tr><th>Normal</th></tr>
<tr><td>282Ω ~ 306 Ω</td></tr>
</table></td><td> 
</td></tr>
</table>

Ⓟ:INNER PROTECTOR

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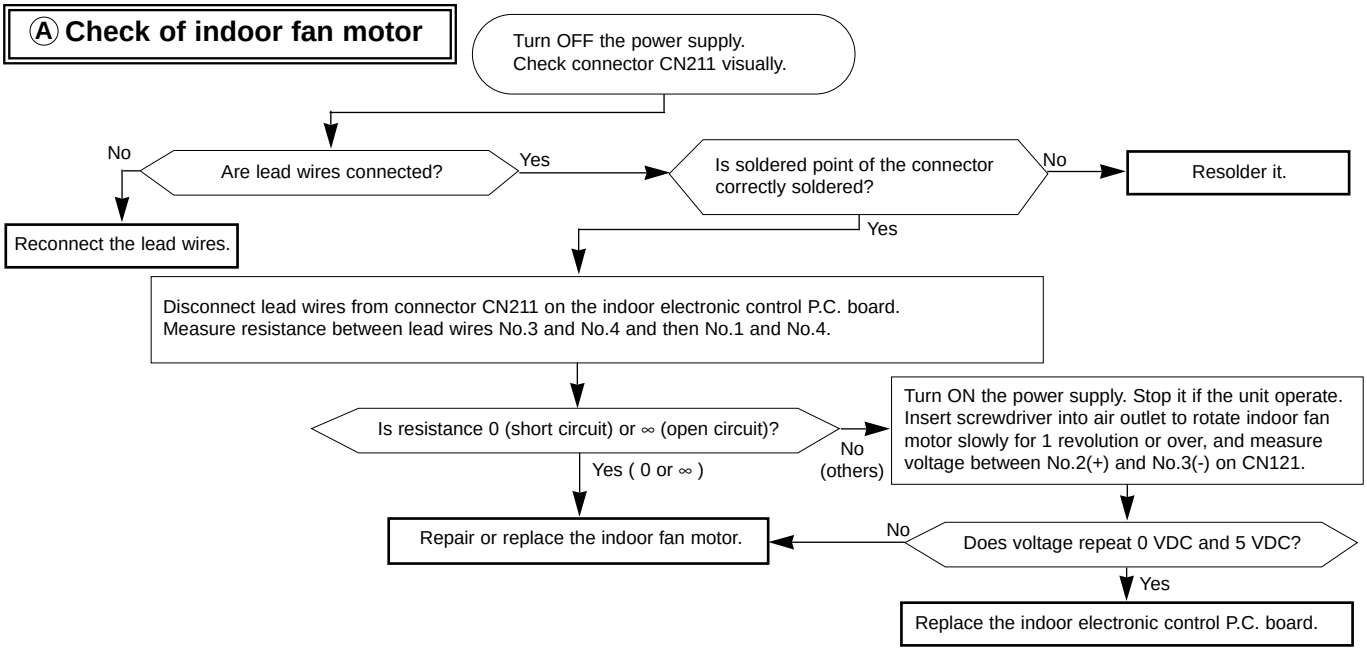
9-5. Troubleshooting flow

When OPERATION INDICATOR lamp flashes 3-time.
Indoor fan motor does not operate.

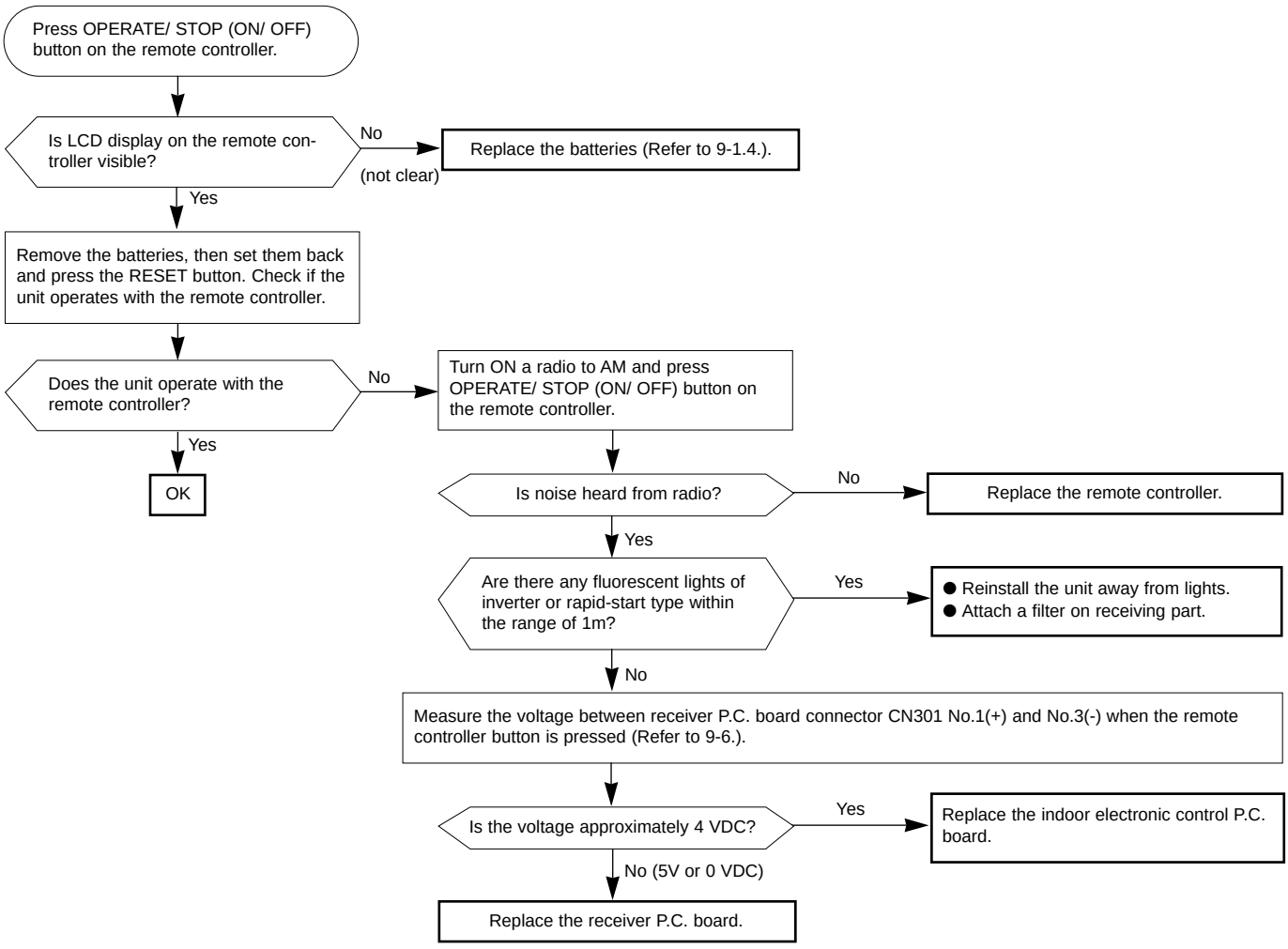
Ⓐ Check of indoor fan motor


Turn OFF the power supply.
Check connector CN211 visually.
Are lead wires connected?
No
Yes
Is soldered point of the connector correctly soldered?
No
Resolder it.
Yes
Reconnect the lead wires.
Disconnect lead wires from connector CN211 on the indoor electronic control P.C. board.
Measure resistance between lead wires No.3 and No.4 and then No.1 and No.4.
Is resistance 0 (short circuit) or ∞ (open circuit)?
Yes (0 or ∞)
No
(others)
Turn ON the power supply. Stop it if the unit operate.
Insert screwdriver into air outlet to rotate indoor fan motor slowly for 1 revolution or over, and measure voltage between No.2(+) and No.3(-) on CN121.
Repair or replace the indoor fan motor.
No
Does voltage repeat 0 VDC and 5 VDC?
Yes
Replace the indoor electronic control P.C. board.

Indoor unit operates by pressing the EMERGENCY OPERATION switch, but does not operate with the remote controller.

Ⓑ Check of remote controller and receiver P.C. board

※ Check if the remote controller is exclusive for this air conditioner.


Press OPERATE/ STOP (ON/ OFF) button on the remote controller.
Is LCD display on the remote controller visible?
No
(not clear)
Replace the batteries (Refer to 9-1.4.).
Yes
Remove the batteries, then set them back and press the RESET button. Check if the unit operates with the remote controller.
Does the unit operate with the remote controller?
No
Turn ON a radio to AM and press OPERATE/ STOP (ON/ OFF) button on the remote controller.
Yes
OK
Is noise heard from radio?
No
Replace the remote controller.
Yes
Are there any fluorescent lights of inverter or rapid-start type within the range of 1m?
Yes
● Reinstall the unit away from lights.
● Attach a filter on receiving part.
No
Measure the voltage between receiver P.C. board connector CN301 No.1(+) and No.3(-) when the remote controller button is pressed (Refer to 9-6.).
Is the voltage approximately 4 VDC?
Yes
Replace the indoor electronic control P.C. board.
No (5V or 0 VDC)
Replace the receiver P.C. board.

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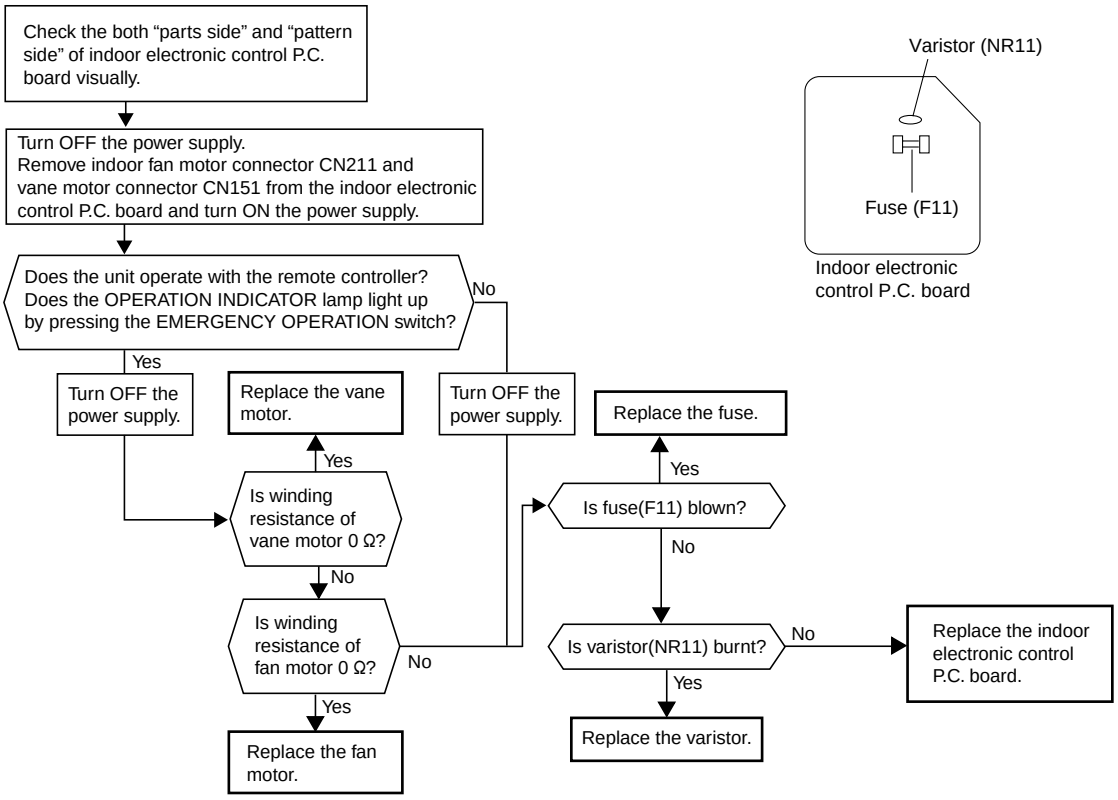
The unit does not operate with the remote controller. Also, the OPERATION INDICATOR lamp does not light up by pressing the EMERGENCY OPERATION switch.

ⓒCheck of indoor electronic control P.C. board


Check the both “parts side” and “pattern side” of indoor electronic control P.C. board visually.
Turn OFF the power supply.
Remove indoor fan motor connector CN211 and vane motor connector CN151 from the indoor electronic control P.C. board and turn ON the power supply.
Does the unit operate with the remote controller?
Does the OPERATION INDICATOR lamp light up by pressing the EMERGENCY OPERATION switch?
No
Yes
Turn OFF the power supply.
Replace the vane motor.
Yes
Is winding resistance of vane motor 0 Ω?
No
Is winding resistance of fan motor 0 Ω?
No
Yes
Replace the fan motor.
Turn OFF the power supply.
Replace the fuse.
Yes
Is fuse(F11) blown?
No
Is varistor(NR11) burnt?
No
Yes
Replace the varistor.
Replace the indoor electronic control P.C. board.
Varistor (NR11)
Fuse (F11)
Indoor electronic control P.C. board

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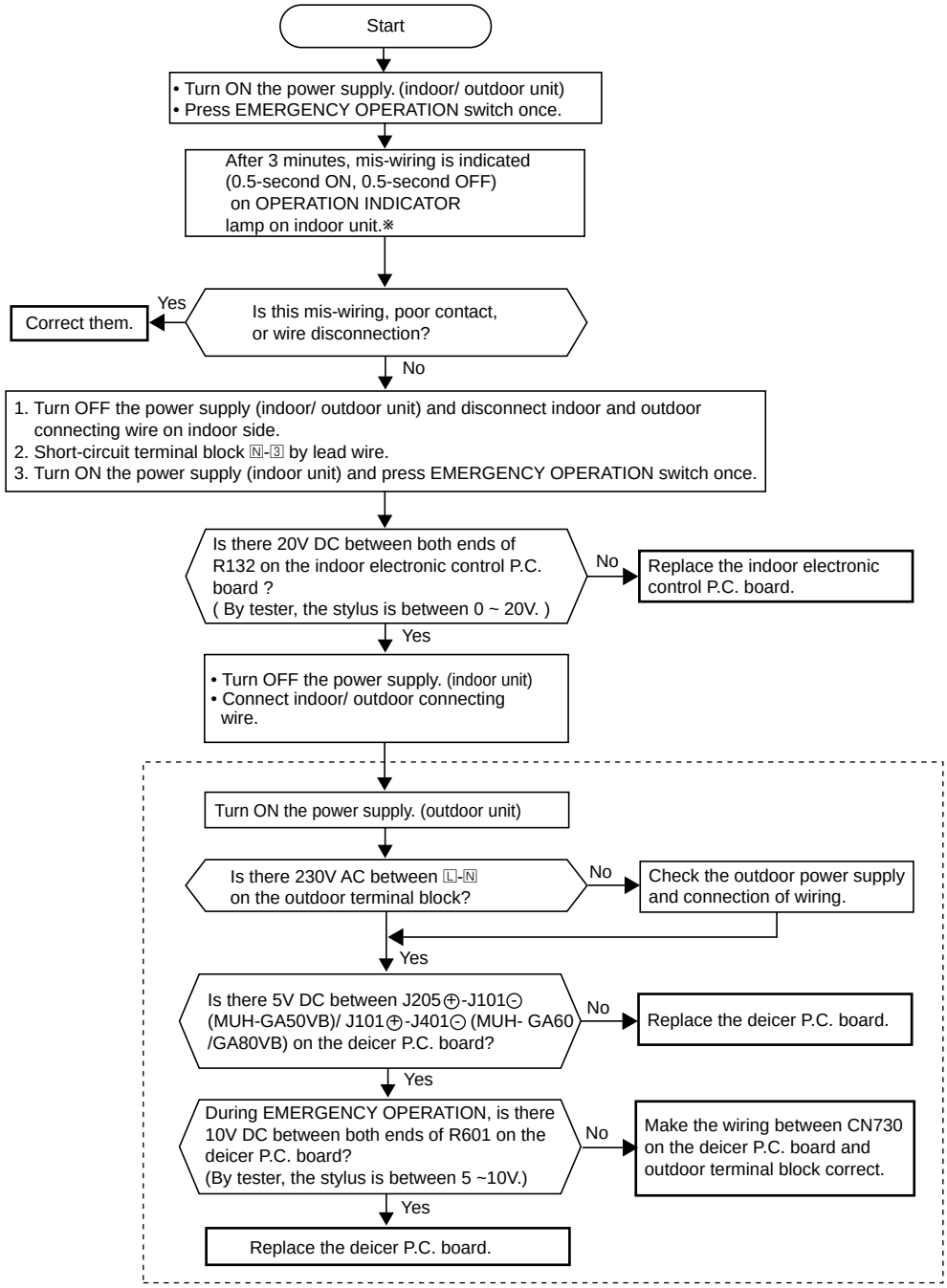
When OPERATION INDICATOR lamp flashes ON and OFF in every 0.5-second.
Outdoor unit does not operate.

ⓓHow to check mis-wiring

※ Short circuit of JPG and JPS on the indoor electronic control P.C. board enables self -check to be displayed in 3 seconds.


Start
• Turn ON the power supply. (indoor/ outdoor unit)
• Press EMERGENCY OPERATION switch once.
After 3 minutes, mis-wiring is indicated (0.5-second ON, 0.5-second OFF) on OPERATION INDICATOR lamp on indoor unit.※
Is this mis-wiring, poor contact, or wire disconnection?
Yes
Correct them.
No
1. Turn OFF the power supply (indoor/ outdoor unit) and disconnect indoor and outdoor connecting wire on indoor side.
2. Short-circuit terminal block N-3 by lead wire.
3. Turn ON the power supply (indoor unit) and press EMERGENCY OPERATION switch once.
Is there 20V DC between both ends of R132 on the indoor electronic control P.C. board ? (By tester, the stylus is between 0 ~ 20V.)
No
Replace the indoor electronic control P.C. board.
Yes
• Turn OFF the power supply. (indoor unit)
• Connect indoor/ outdoor connecting wire.
Turn ON the power supply. (outdoor unit)
Is there 230V AC between L-N on the outdoor terminal block?
No
Check the outdoor power supply and connection of wiring.
Yes
Is there 5V DC between J205⊕-J101⊖ (MUH-GA50VB)/ J101⊕-J401⊖ (MUH- GA60 /GA80VB) on the deicer P.C. board?
No
Replace the deicer P.C. board.
Yes
During EMERGENCY OPERATION, is there 10V DC between both ends of R601 on the deicer P.C. board? (By tester, the stylus is between 5 ~10V.)
No
Make the wiring between CN730 on the deicer P.C. board and outdoor terminal block correct.
Yes
Replace the deicer P.C. board.

Refer to outdoor unit service manual.

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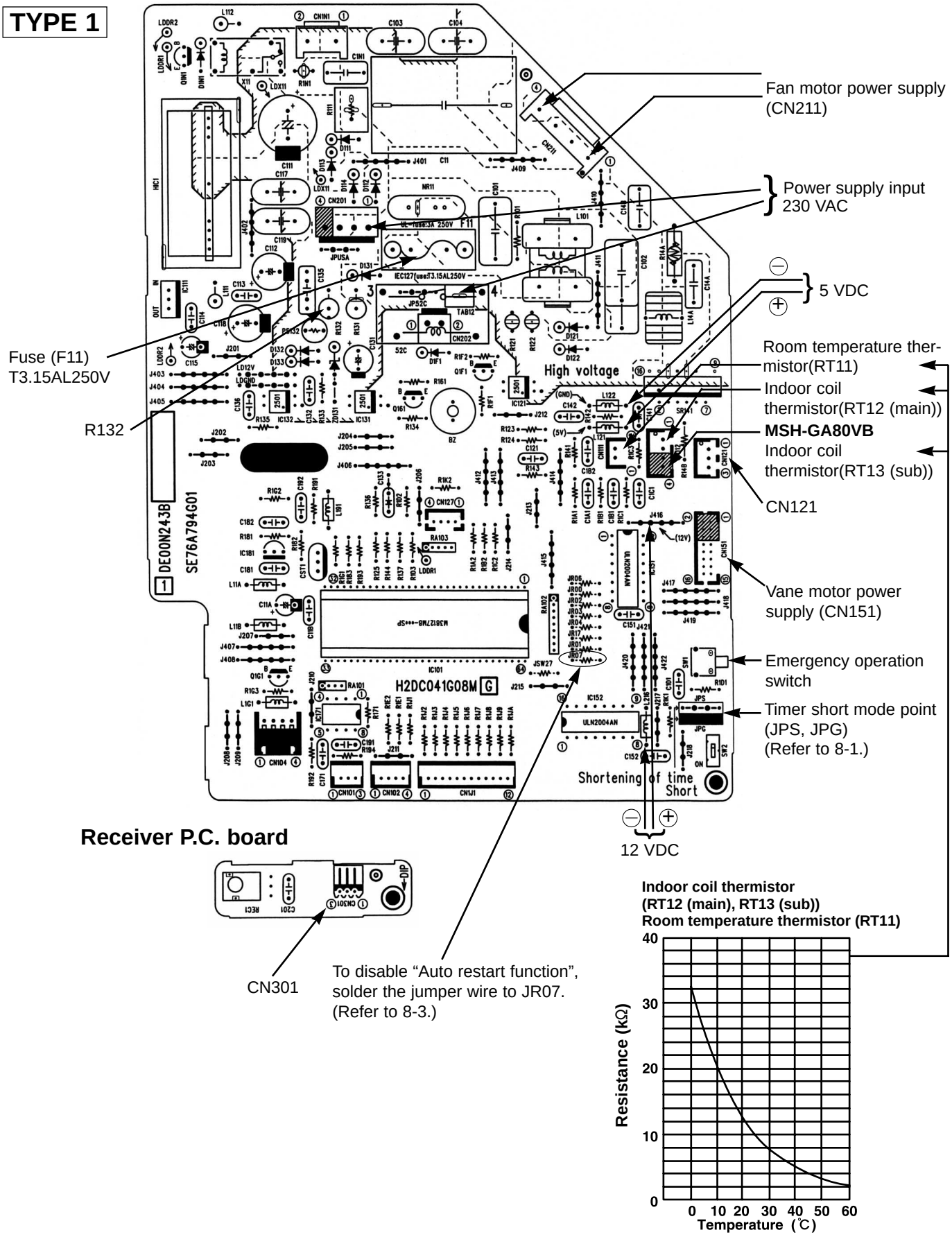
9-6. Test point diagram and voltage

MSH-GA50VB MSH-GA60VB MSH-GA80VB

Indoor electronic control P.C. board

※ There are 2 types of electronic control P.C. boards (TYPE1/TYPE2).
They are both compatible with MSH-GA50/60/80VB.

TYPE 1



Receiver P.C. board

CN301

To disable “Auto restart function”, solder the jumper wire to JR07. (Refer to 8-3.)

Indoor coil thermistor (RT12 (main), RT13 (sub)) Room temperature thermistor (RT11)

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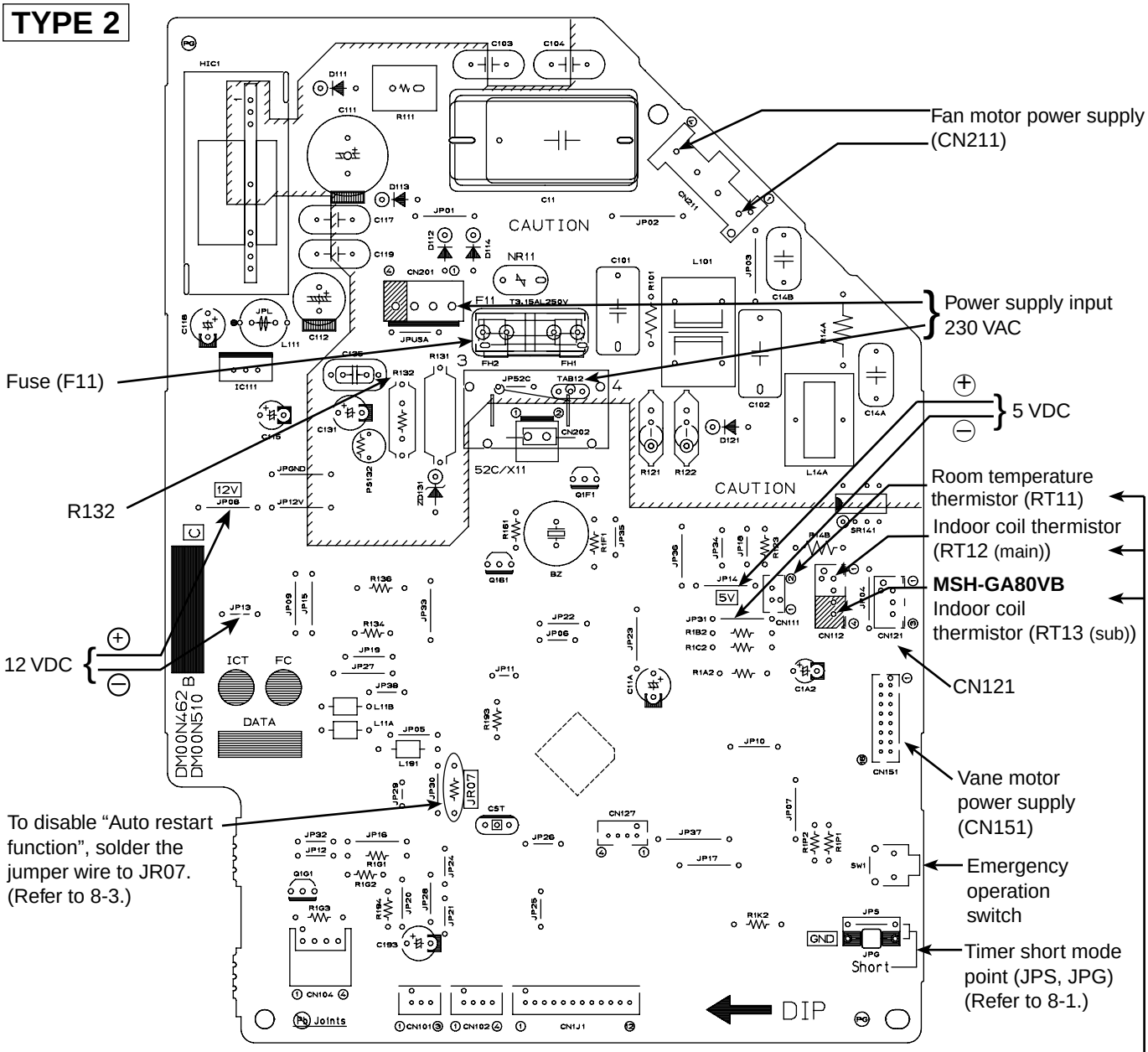
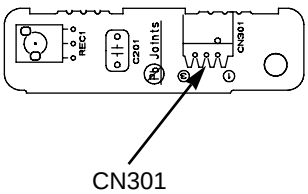
MSH-GA50VB MSH-GA60VB MSH-GA80VB
Indoor electronic control P.C. board

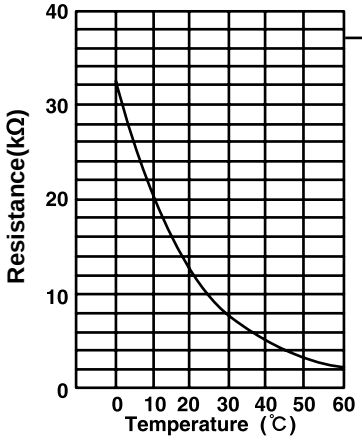
TYPE 2



Receiver P.C. board



Indoor coil thermistor (RT12 (main), RT13 (sub)) Room temperature thermistor (RT11)



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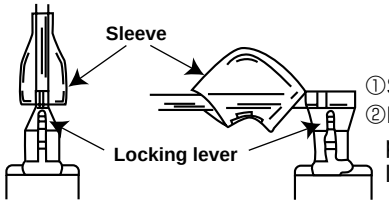
10 DISASSEMBLY INSTRUCTIONS

<"Terminal with locking mechanism" Detaching points>

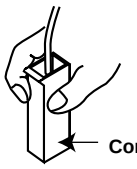
The terminal which has the locking mechanism can be detached as shown below.
There are two types (Refer to (1) and (2)) of the terminal with locking mechanism.
The terminal without locking mechanism can be detached by pulling it out.
Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.



①Slide the sleeve.
②Pull the terminal while pushing the locking lever.

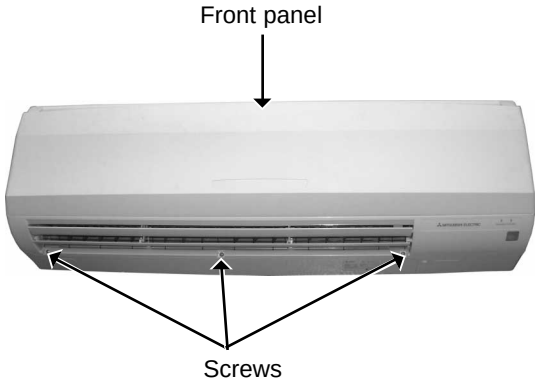
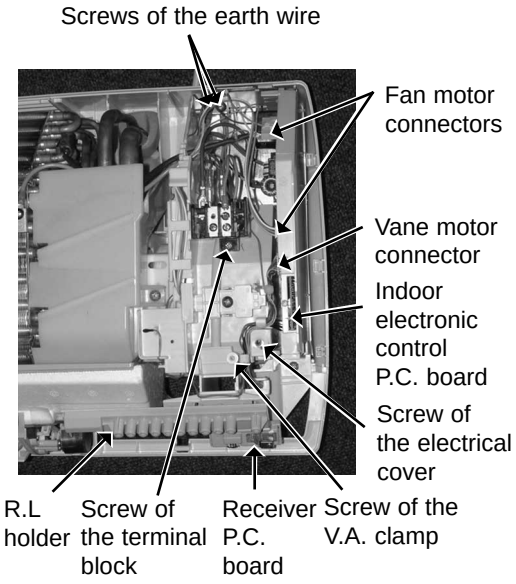
(2) The terminal with this connector has the locking mechanism.



①Hold the sleeve, and pull out the terminal slowly.

10-1. MSH-GA50VB MSH-GA60VB MSH-GA80VB

NOTE: Turn OFF power supply before disassembly.

OPERATING PROCEDURE	PHOTOS
1. Removing the front panel (1) Remove the screw caps of the front panel. Remove the screws. (2) Pull the panel down to your side slightly and unhook the catches at the top.	**Photo 1** 
2. Removing the electronic control P.C. board, the receiver P.C. board and the display P.C. board (1) Remove the front panel. (Refer to 1.) (2) Remove the screw of the electrical cover. Remove the electrical cover. (3) Remove the screws of the V.A. clamp. Remove the V.A. clamp. (4) Remove the screw of the terminal block. (5) Remove the screws of the earth wire. (6) Disconnect all the connectors and all the lead wires on the electronic control P.C. board. (7) Remove the R.L holder. (8) Remove the electronic control P.C. board. (9) Open the R.L holder, remove the receiver P.C. board and the display P.C. board.	**Photo 2** 

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OPERATING PROCEDURE

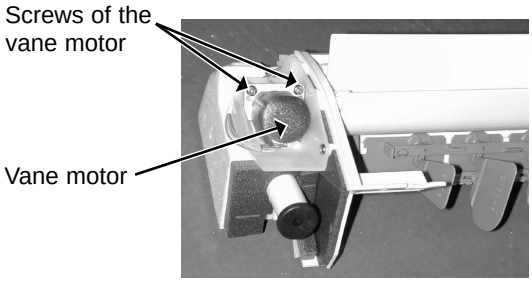
3. Removing the electrical box

(1) Remove the front panel. (Refer to 1.)
(2) Remove the electrical cover. (Refer to 2.)
(3) Disconnect the connector of the indoor coil thermistor.
(4) Disconnect the motor connector (CN211 and CN121) and the vane motor connector (CN151) on the electronic control P.C. board.
(5) Remove the screws of earth wire.
(6) Remove the fan motor lead wire and indoor coil thermistor from the electrical box.
(7) Remove the lead wire of vane motor from the bottom of electrical box.
(8) Remove the screw fixing the electrical box and remove the electrical box.

4. Removing the vane motor

(1) Remove the front panel. (Refer to 1.)
(2) Remove the electrical cover. (Refer to 2.)
(3) Remove the lead wire of vane motor. (Refer to 3.)
(4) Remove the R.L. holder.
(5) Pull out the drain hose from the nozzle assembly and remove the nozzle assembly.
(6) Remove the screws of the vane motor and disconnect the connector.
(7) Remove the vane motor.

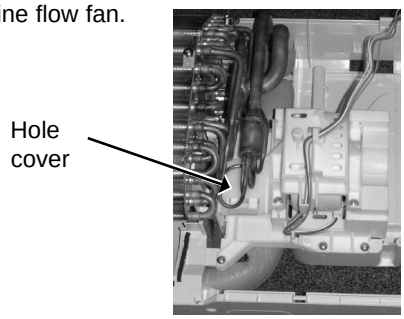
Photo 5



5. Removing the line flow fan and the indoor fan motor

(1) Remove the front panel. (Refer to 1.)
(2) Remove the electrical box. (Refer to 3.)
(3) Pull out the drain hose from the nozzle assembly and remove the nozzle assembly.
(4) Remove the water cut.
(5) Slide the hole cover and remove the hole cover.
(6) Remove the hexagon socket set screw from the line flow fan.
(7) Remove the screws fixing the fan motor and remove the fan motor. (Be careful not to drop the fan motor because it is heavy.)
(8) Remove the screws fixing the left side of the heat exchanger.
(9) Lift the left side of the heat exchanger.
(10) Remove the line flow fan.

Photo 8



PHOTOS

Photo 3

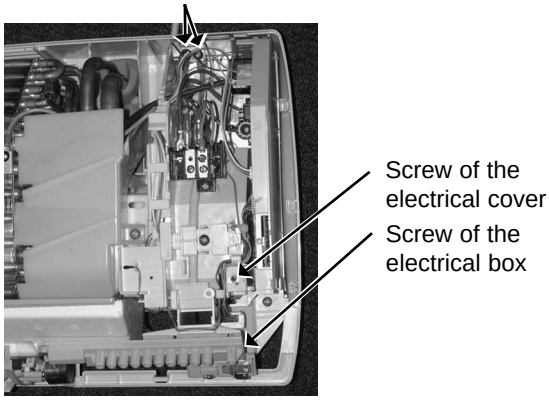


Photo 4

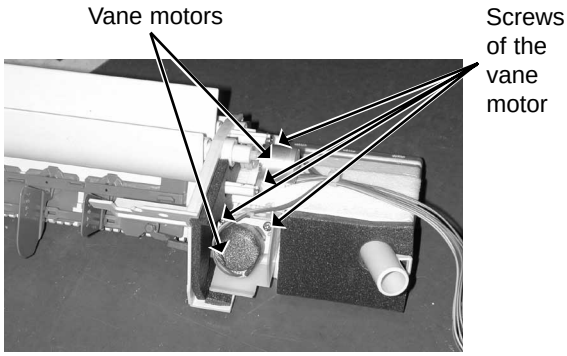


Photo 6

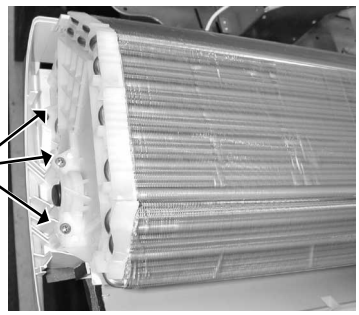
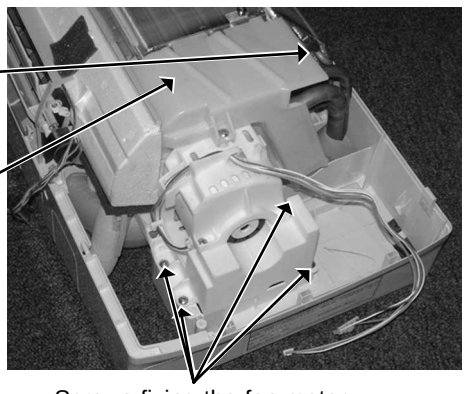


Photo 7



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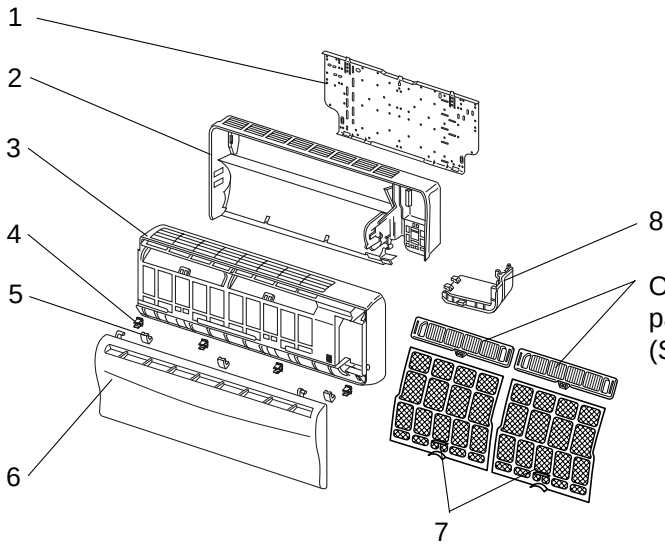
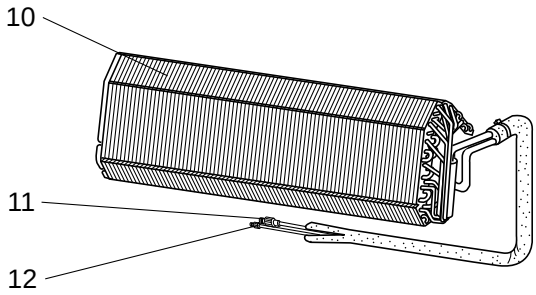
11 PARTS LIST (non-RoHS compliant)

MSH-GA50VB
MSH-GA60VB
MSH-GA80VB

11-1. INDOOR UNIT STRUCTURAL PARTS



11-2. INDOOR UNIT HEAT EXCHANGER



11-1. INDOOR UNIT STRUCTURAL PARTS

Part number that is circled is not shown in the illustration.

NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit			Remarks
				MSH-GA50 VB - E1	MSH-GA60 VB - E1	MSH-GA80 VB - E1	
1	E02 527 970	INSTALLATION PLATE		1	1	1	
2	E02 685 234	BOX		1	1	1	
3	E02 888 000	FRONT PANEL ASSEMBLY		1	1	1	Including No.4,5,6
4	E02 408 142	CATCH		4	4	4	4PCS/ SET
5	E02 685 067	SCREW CAP		3	3	3	3PCS/ SET
6	E02 888 010	GRILLE		1	1	1	
7	E02 534 100	CATECHIN AIR FILTER		2	2	2	1PCE/ SET
8	E02 685 975	CORNER BOX RIGHT		1	1	1	
⑨	E02 891 007	LAMP PANEL		1	1	1	

11-2. INDOOR UNIT HEAT EXCHANGER

10	E02 891 620	INDOOR HEAT EXCHANGER		1	1		
	E02 893 620	INDOOR HEAT EXCHANGER				1	
11	E02 179 667	UNION (GAS)		1			ϕ12.7
	E02 138 666	UNION (GAS)			1	1	ϕ15.88
12	E02 151 667	UNION (LIQUID)		1	1		ϕ6.35
	E02 527 667	UNION (LIQUID)				1	ϕ9.52

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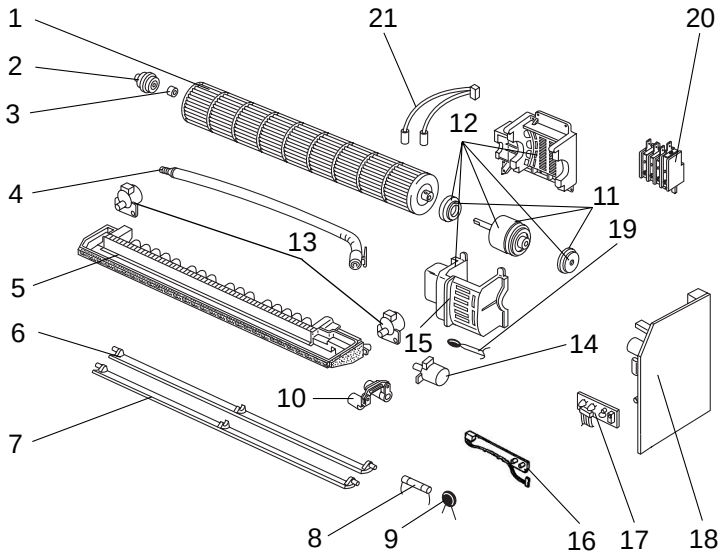
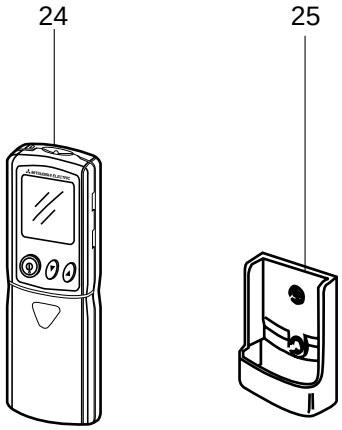
PARTS LIST (non-RoHS compliant)

MSH-GA50VB
MSH-GA60VB
MSH-GA80VB

11-3. INDOOR UNIT FUNCTIONAL PARTS AND ELECTRICAL PARTS



11-4. ACCESSORY AND REMOTE CONTROLLER



11-3. INDOOR UNIT FUNCTIONAL PARTS AND ELECTRICAL PARTS

Part numbers that are circled are not shown in the illustration.

NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit			Remarks
				MSH-GA50 VB - E1	MSH-GA60 VB - E1	MSH-GA80 VB - E1	
1	E02 527 302	LINE FLOW FAN		1	1	1	
2	E02 408 509	BEARING MOUNT		1	1	1	
3	E02 001 504	SLEEVE BEARING		1	1	1	
4	E02 408 702	DRAIN HOSE		1	1	1	
5	E02 996 235	NOZZLE ASSEMBLY		1	1	1	
6	E02 685 040	VANE UPPER		1	1	1	
7	E02 685 041	VANE LOWER		1	1	1	
8	E02 127 382	FUSE	F11	1	1	1	T3.15AL250V
9	E02 817 385	VARISTOR	NR11	1	1	1	
10	E02 527 034	VANE CRANK SET		1	1	1	
11	E02 527 300	INDOOR FAN MOTOR ASSEMBLY	MF			1	RC4V40 -□□ Including RUBBER MOUNT
12	E12 F57 300	INDOOR FAN MOTOR ASSEMBLY	MF	1	1		RC4V40 -□□ Including RUBBER MOUNT, MOTOR BAND and MOTOR BED
13	E02 448 303	VANE MOTOR (VERTICAL)	MV2	2	2	2	RIGHT & LEFT
14	E02 408 303	VANE MOTOR (HORIZONTAL)	MV1	1	1	1	UP & DOWN
15	E12 F57 333	MOTOR BAND SET		1	1		Including two kinds of motor bands
	E02 527 333	MOTOR BAND				1	
16	E02 528 329	DISPLAY P.C. BOARD		1	1	1	
17	E02 527 468	RECEIVER P.C. BOARD		1	1	1	
18	E02 891 452	ELECTRONIC CONTROL P.C. BOARD ※1		1			AUTO RESTART Including No.16
	E02 892 452	ELECTRONIC CONTROL P.C. BOARD ※1			1		AUTO RESTART Including No.16
	E02 893 452	ELECTRONIC CONTROL P.C. BOARD ※1				1	AUTO RESTART Including No.16
19	E02 527 308	ROOM TEMPERATURE THERMISTOR	RT11	1	1	1	
20	E02 819 375	TERMINAL BLOCK	TB	1	1	1	
21	E02 408 307	INDOOR COIL THERMISTOR	RT12	1	1		
	E02 527 307	INDOOR COIL THERMISTOR	RT12, RT13			1	
(22)	E02 528 034	VANE MOTOR SUPPORT SET (RIGHT)		1	1	1	
(23)	E02 529 034	VANE MOTOR SUPPORT SET (LEFT)		1	1	1	

※1 Refer to 9-6.

11-4. ACCESSORY AND REMOTE CONTROLLER

24	E02 529 426	REMOTE CONTROLLER		1	1	1	KP0A, KM04A
25	E02 527 083	REMOTE CONTROLLER HOLDER		1	1	1	

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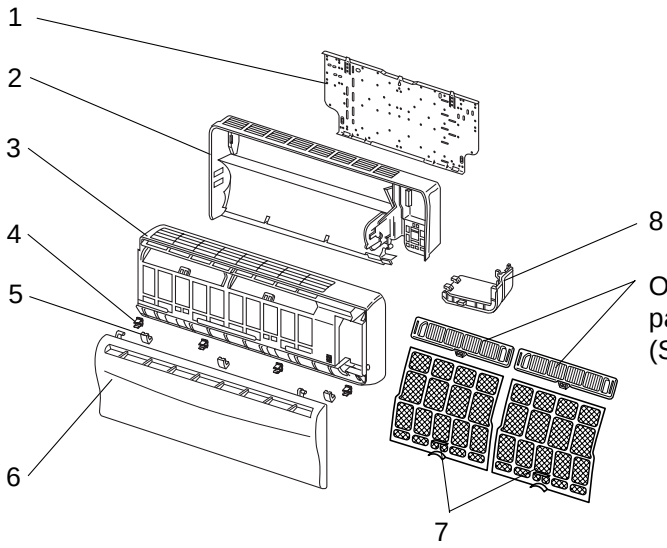
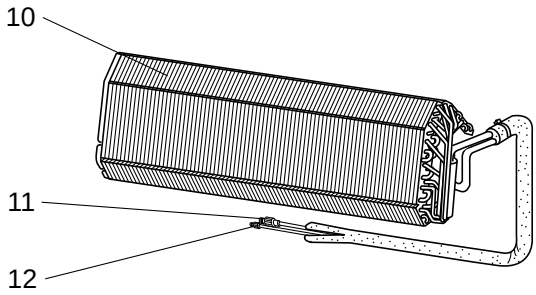
12 RoHS PARTS LIST (RoHS compliant)

MSH-GA50VB
MSH-GA60VB
MSH-GA80VB

12-1. INDOOR UNIT STRUCTURAL PARTS



12-2. INDOOR UNIT HEAT EXCHANGER



12-1. INDOOR UNIT STRUCTURAL PARTS

Part number that is circled is not shown in the illustration.

NO.	RoHS	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit			Remarks
					MSH-GA50 VB - E1	MSH-GA60 VB - E1	MSH-GA80 VB - E1	
1	G	E12 527 970	INSTALLATION PLATE		1	1	1	
2	G	E12 685 234	BOX		1	1	1	
3	G	E12 888 000	FRONT PANEL ASSEMBLY		1	1	1	Including No.4,5,6
4	G	E12 408 142	CATCH		4	4	4	4PCS/ SET
5	G	E12 685 067	SCREW CAP		3	3	3	3PCS/ SET
6	G	E12 888 010	GRILLE		1	1	1	
7	G	E12 534 100	CATECHIN AIR FILTER		2	2	2	1PCE/ SET
8	G	E12 685 975	CORNER BOX RIGHT		1	1	1	
(9)	G	E12 891 007	LAMP PANEL		1	1	1	

12-2. INDOOR UNIT HEAT EXCHANGER

10	G	E12 891 620	INDOOR HEAT EXCHANGER		1	1		
	G	E12 893 620	INDOOR HEAT EXCHANGER				1	
11	G	E12 179 667	UNION (GAS)		1			ϕ12.7
	G	E12 138 666	UNION (GAS)			1	1	ϕ15.88
12	G	E12 151 667	UNION (LIQUID)		1	1		ϕ6.35
	G	E12 527 667	UNION (LIQUID)				1	ϕ9.52

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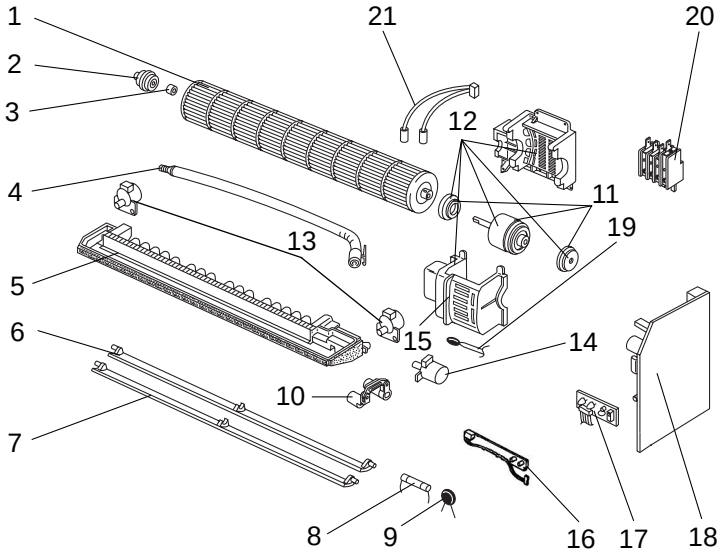
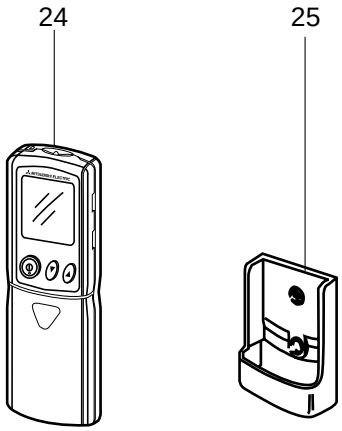
RoHS PARTS LIST (RoHS compliant)

MSH-GA50VB
MSH-GA60VB
MSH-GA80VB

12-3. INDOOR UNIT FUNCTIONAL PARTS AND ELECTRICAL PARTS



12-4. ACCESSORY AND REMOTE CONTROLLER



12-3. INDOOR UNIT FUNCTIONAL PARTS AND ELECTRICAL PARTS

Part numbers that are circled are not shown in the illustration.

NO.	RoHS	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit MSH-GA50 VB - E1	Q'ty/unit MSH-GA60 VB - E1	Q'ty/unit MSH-GA80 VB - E1	Remarks
1	G	E12 527 302	LINE FLOW FAN		1	1	1	
2	G	E12 408 509	BEARING MOUNT		1	1	1	
3	G	E12 001 504	SLEEVE BEARING		1	1	1	
4	G	E12 408 702	DRAIN HOSE		1	1	1	
5	G	E12 996 235	NOZZLE ASSEMBLY		1	1	1	
6	G	E12 685 040	VANE UPPER		1	1	1	
7	G	E12 685 041	VANE LOWER		1	1	1	
8	G	E12 A49 382	FUSE	F11	1	1	1	T3.15AL250V
9	G	E12 817 385	VARISTOR	NR11	1	1	1	
10	G	E12 527 034	VANE CRANK SET		1	1	1	
11	G	E12 527 300	INDOOR FAN MOTOR ASSEMBLY	MF			1	RC4V40 -□□ Including RUBBER MOUNT
12	G	E12 F57 300	INDOOR FAN MOTOR ASSEMBLY	MF	1	1		RC4V40 -□□ Including RUBBER MOUNT, MOTOR BAND and MOTOR BED
13	G	E12 448 303	VANE MOTOR (VERTICAL)	MV2	2	2	2	RIGHT & LEFT
14	G	E12 408 303	VANE MOTOR (HORIZONTAL)	MV1	1	1	1	UP & DOWN
15	G	E12 F57 333	MOTOR BAND SET		1	1		Including two kinds of motor bands
	G	E12 527 333	MOTOR BAND				1	
16	G	E12 528 329	DISPLAY P.C. BOARD		1	1	1	
17	G	E12 527 468	RECEIVER P.C. BOARD		1	1	1	
18	G	E12 891 452	ELECTRONIC CONTROL P.C. BOARD ※1		1			AUTO RESTART Including No.16
	G	E12 892 452	ELECTRONIC CONTROL P.C. BOARD ※1			1		AUTO RESTART Including No.16
	G	E12 893 452	ELECTRONIC CONTROL P.C. BOARD ※1				1	AUTO RESTART Including No.16
19	G	E12 527 308	ROOM TEMPERATURE THERMISTOR	RT11	1	1	1	
20	G	E12 819 375	TERMINAL BLOCK	TB	1	1	1	
21	G	E12 408 307	INDOOR COIL THERMISTOR	RT12	1	1		
	G	E12 527 307	INDOOR COIL THERMISTOR	RT12, RT13			1	
(22)	G	E12 528 034	VANE MOTOR SUPPORT SET (RIGHT)		1	1	1	
(23)	G	E12 529 034	VANE MOTOR SUPPORT SET (LEFT)		1	1	1	

※1 Refer to 9-6.

12-4. ACCESSORY AND REMOTE CONTROLLER

24	G	E12 529 426	REMOTE CONTROLLER		1	1	1	KP0A, KM04A
25	G	E12 527 083	REMOTE CONTROLLER HOLDER		1	1	1	

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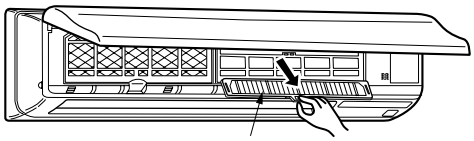
13 OPTIONAL PARTS

AIR CLEANING FILTER

- Normal life of AIR CLEANING FILTER is 4 months. However, when it becomes dirty, replace it as soon as possible.
- Clogged AIR CLEANING FILTER may reduce the air conditioner capacity or cause frost on the air outlet.
- DO NOT reuse AIR CLEANING FILTER even if it is washed.
- DO NOT remove or attach AIR CLEANING FILTER during unit operation.

Model	Part No.
MSH-GA50VB MSH-GA60VB MSH-GA80VB	MAC-1700FT



Air cleaning filter (White bellows type)

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Distributed in Jan. 2012. No.OB367 REVISED EDITION-D
Distributed in Aug. 2011. No.OB367 REVISED EDITION-C
Distributed in May 2007. No.OB367 REVISED EDITION-B 6
Distributed in May 2006. No.OB367 REVISED EDITION-A 6
Distributed in Oct. 2004. No.OB367 6
Made in Japan

New publication, effective Jan. 2012
Specifications are subject to change without notice.

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